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The Croonian Lectures

ON

THE CHEMICAL CORRELATION OF THE FUNCTIONS OF THE BODY.

Delivered before the Royal College of Physicians of London on June 20th, 22nd, 27th, and 29th, 1905,

BY ERNEST HENRY STARLING, M.D. LOND., F.R.S.,

FELLOW OF THE COLLEGE; JODRELL PROFESSOR OF PHYSIOLOGY, UNIVERSITY COLLEGE, LONDON.

LECTURE I.

Delivered on June 20th.

THE CHEMICAL CONTROL OF THE FUNCTIONS OF THE BODY.

MR. PRESIDENT AND GENTLEMEN,—From the remotest ages the existence of a profession of medicine, the practice of its art and its acceptance as a necessary part of every community have been founded on a tacit assumption that the functions of the body, whether of growth or activity of organs, can be controlled by chemical means; and research by observation of accident or by experiment for such means has resulted in the huge array of drugs which form the pharmacopœias of various civilised countries and the common armamentarium of the medical profession throughout the world. The practice of drugging rests on the supposition that the functions of the body can be influenced in a normal direction by such means. I propose in these lectures to inquire how far such a belief is consonant with our own knowledge of the physiological workings of the body, how far, that is to say, the activities and growth of the different organs of the body are determined and coördinated among each other by chemical substances produced in the body itself but capable of classification with the drugs of the physician. If a mutual control, and therefore coördination, of the different functions of the body be largely determined by the production of definite chemical substances in the body, the discovery of the nature of these substances will enable us to interpose at any desired phase in these functions and so to acquire an absolute control over the workings of the human body. Such a control is the goal of medical science. How far have we progressed towards it? How far are we justified in regarding its attainment as possible?

I hope to be able to vindicate to you the assumption which is at the basis of medical practice and to show that the activities of, at any rate, the large majority of the organs of the body are coördinated among themselves by the production and circulation of chemical substances, so that the results of physiological researches up to the present justify us in the faith that within a reasonable space of time we shall be in the possession of chemical substances which are normal physiological products, and by means of which we shall be in a position to control not only the activities but also the growth of a large number of the organs of the body.

In man and the higher animals the marvellous adaptations effected by means of the central nervous system are so much in evidence that physiologists have been tempted to ascribe every nexus between distant organs to the intervention of the nervous system; the more so because by this means an adaptation to changes, internal or external, can be effected in many cases within a fraction of a second. But in the evolution of life upon this earth this method of adaptation is of comparatively late appearance and is confined almost entirely to one division of living beings—i.e., the animal kingdom. In the lowest organisms, the unicellular, such as the bacteria and protozoa, the only adaptations into the mechanism of which we can gain any clear insight are those to the environment of the organism and in these cases the mechanism is almost entirely a chemical one. The organism approaches its food or flies from harmful media in consequence of chemical stimuli; it prepares its food for digestion or digests it by the formation of chemical substances, toxins or enzymes. In the lowest metazoa, such as the sponges, there is still no trace of any nervous system. The coördination between the different cells of the colony is still determined by purely chemical means. The aggregation of the phagocytic cells round a foreign body is apparently due to the attraction exerted on them by the chemical substances produced in the death of the injured tissues.

With the appearance of a central nervous system or systems in the higher metazoa the quick motor reactions determined by this system form the most obvious vital manifestations of the animal. But the nervous system has been evolved for quick adaptations, not for the abolition of the chemical correlations which existed before a nervous system came into being. A study of the phenomena of even the highest animals shows that the development of the quick nervous adaptations involves no abrogation of the other more primitive class of reactions—i.e., the chemical ones. Where the reaction is one occupying seconds or fractions of a second the nervous system is of necessity employed. Where the reaction may take minutes, hours, or even days for its accomplishment the nexus between the organs implicated may be chemical. Already we are able, in many cases, to prove the existence of such a chemical nexus and to employ it in artificially producing a state of growth or activity which is in normal circumstances merely a phase in a complex series of physiological changes.

The chemical reactions or adaptations of the body, like those which are carried out through the intermediation of the central nervous system, can be divided into two main classes—(1) those which are evoked in consequence of changes impressed upon the organism as a whole from without; and (2) those which, acting entirely within the body, serve to correlate the activities, in the widest sense of the term, of the different parts and organs of the body.

The first class of adaptations includes those reactions of the body to chemical poisons produced by bacteria or higher organisms and represents one of the most important means by which the body maintains itself in the struggle for existence. The complicated phenomena involved in the formation of antitoxins, of cytolysins, of bactericidal substances, and such like means of protection, have been the subject of much study of recent years and their immediate interest to the practical physician renders it unnecessary for me to devote any time to their discussion, especially as the subject is one to which I have not given any personal attention. The investigation of the second class, that of the correlation of the activities of organs, has by reason of its greater obscurity, or of the greater difficulty of its practical application in medicine, fallen largely to the province of the physiologist and I therefore propose to deal almost exclusively with those members of this class of reactions which have so far been definitely ascertained.

Before, however, entering into details of any particular correlation it may be profitable to consider what we may expect to be the nature of the substance which will in any given case act as a chemical nexus between different organs. We are dealing here with a question of general pharmacology. As Ehrlich has pointed out, the chemical substances which act on the body or parts of the body, producing physiological or pharmacological effects, can be divided largely into two main groups. Ehrlich's conception of the first group is bound up with his conception of the nature of the living protoplasmic molecule as a living nucleus with side chains of various descriptions. Assimilation of foodstuffs consists in the linking on of the food molecule as a fresh side chain to the central nucleus. The common feature among the substances of the first class is their close resemblance to an assimilable substance or foodstuff. All these substances acquire a close attachment to, or even identification with, the living protoplasm, and as a rule their effects are apparent only after sufficient time has elapsed for their building up into the protoplasmic molecule. To this class belong the numerous substances closely allied in their chemical character to the proteids which are designated as toxins. All are produced by the agency of living organisms. I need only adduce as examples the various products of the pathogenic bacteria, such as diphtheria and tetanus, the poisonous toxins of higher plants, such as ricin and abrin, and those formed as a weapon of offence by higher animals, such as the active principles of the various snake venoms. According to Ehrlich, these all resemble assimilable foodstuffs in that they possess a haptophore group by which they can anchor themselves on to the living molecule, becoming thus part of its side chains. The toxophore group thus introduced into the living molecule upsets and disorganises its reactions, leading by disorder of one or more functions to the death of

the animal. In most cases the toxophore group, at any rate, is specific for some definite tissue or type of cell. Thus tetanotoxin exercises its effect almost entirely on the peripheral sensory neurones. It is doubtful, however, whether the haptophore group is so specific, if we are to accept Ehrlich's conception of the mode of formation of antitoxins; since we may get formation of antitoxins in animals where the toxic effect is entirely wanting.

The idea that these toxins ape the part in the protoplasmic molecule of an assimilable foodstuff does not involve as a necessary sequence the formation of antitoxins or antibodies to the normal foodstuffs. That, in fact, the power of assimilation is independent of the power to produce antibodies has been shown by van Dungern in a research specially directed to determine this point. This observer found that the proteids of crabs' blood could be injected into the blood stream of the rabbit and undergo assimilation. Being proteids foreign to rabbits' blood their injection provoked the production in the latter of a precipitin for crabs' blood plasma, but the assimilation of the proteid and the production of the precipitin were found to be absolutely independent phenomena.

The first group therefore of pharmacological substances may be defined as substances presenting many points of resemblance to proteids, potent like enzymes in infinitesimal doses, and giving rise as a result of their introduction into the body to a reaction consisting in the production of an antibody.

Ehrlich's second group of substances, which includes practically all our common drugs, probably act on the protoplasmic molecule or part of it by reason of their chemico-physical properties or their molecular configuration. It is difficult to give a more definite expression of their mode of action. We know that in many cases slight changes in the molecule, such as the introduction or withdrawal of an ethyl, methyl, or NH_2 group into or from a drug or group of drugs, alter their physiological actions in a regular manner. We know, moreover, that substances of the most diverse constitution, such as the various anæsthetics, may have little more than their fat solvent powers in common. All these drugs, however, are more or less stable compounds, generally to be obtained in a crystalline form and not easily destroyed by heat. On introduction into the body the incubation period of their physiological effects is generally determined only by the time necessary for their distribution to, and their diffusion into, the cells which they chiefly affect. Although repeated doses of them can set up a certain degree of tolerance, in no case is there any evidence of the formation of a physiological antidote or antitoxin to the poison.

To which of these two groups of bodies must we assign the chemical messengers which, speeding from cell to cell along the blood stream, may coördinate the activities and growth of different parts of the body? The specific character of the greater part of the toxins which are known to us (I need only instance such toxins as those of tetanus and diphtheria) would suggest that the substances produced for effecting the correlation of organs within the body, through the intermediation of the blood stream, might also belong to this class, since here also specificity of action must be a distinguishing characteristic. These chemical messengers, however, or "hormones" (from ὁρμάω, I excite or arouse), as we might call them, have to be carried from the organ where they are produced to the organ which they affect by means of the blood stream and the continually recurring physiological needs of the organism must determine their repeated production and circulation through the body. If they belong to the first class and are analogous to the toxins, each production of a given substance and its discharge into the blood stream must give rise to the formation of a specific antibody, which must increase in amount with each production of the substance in question and tend therefore to neutralise its physiological effects. It might be suggested that in the case of these chemical messengers the formation of an antibody was a local one and limited to the organ affected and that, in fact, their physiological effect—e.g., secretion—was actually a pouring out of the antibody to the chemical messenger. But, as we shall see later, experimental evidence is entirely against this view, which, moreover, is not supported by any known instance of a similar localisation of antibody as a result of injection into the organism of any of the substances which belong definitely to the toxin class. The formation of antibodies appears, in fact, to be not a process of value in the normal physiological life of the organism but one which has been evolved as a chemical means of defence to prevent the spread of injurious substances from the spot originally affected or attacked.

We are therefore forced to the conclusion that if the processes of coördination of activities among the organs of the body are carried out under physiological conditions to any large extent by chemical means—i.e., by the despatch of chemical messengers along the blood stream—these emissary substances must belong to Ehrlich's second order of substances acting on the body and must, in fact, fall into the same category as the drugs of our Pharmacopœia. Among these, indeed, specificity is not wanting and is the basis of their classification by pharmacologists. Thus we have drugs elevating or depressing the activity of the nervous system; we can excite secretion in all the glands of the body by pilocarpin; we can stimulate and finally paralyse the præganglionic nerve endings of the sympathetic system by the injection of nicotine, or arouse the anabolic mechanism of the heart by the administration of digitalis. In all these cases we are certainly interfering with normal processes. The methods, however, which we employ are not at variance with those made use of by the body itself in securing the harmonious coöperation of its various parts.

In discussing the internal chemical reactions of the body it will be convenient to divide them into two classes—viz., those which involve (1) increased activity of an organ, and (2) increased growth of a tissue or organ. In both cases we must assume that the reaction to the chemical stimulus is itself chemical, the first class including, however, those changes which are chiefly katabolic or dissimilative and are always associated with activity, and the second class involving diminished katabolism and increased building up or anabolism. We might, in fact, speak of the two classes of chemical stimulants as augmentor and inhibitor.

REACTIONS INVOLVING INCREASED ACTIVITY OF ORGANS.

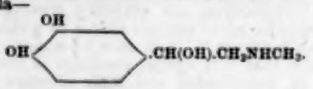
The most striking because the simplest of this class of reactions is that which determines in higher animals the adequate supply of a contracting muscle with oxygen and removal of its chief waste product, carbon dioxide. The increased depth and frequency of respiration contingent on muscular exertion are familiar to everyone and we know that the physiological object of such changes is to secure the increased ventilation rendered necessary by the enormous rise of gaseous metabolism which accompanies muscular exercise. Even moderate work may raise the gaseous exchanges to between four and eight times their amount during rest. This increase in the respiratory movements is entirely involuntary and may, in its earlier stages, when affecting chiefly depth of respiration, be absolutely unnoticed by the subject of them. How is the respiratory centre aroused to an increased activity which is absolutely proportional to the increased metabolism of the distant muscles? A nervous path is at once excluded by the fact that hyperpnœa or even dyspnœa may be excited in an animal after division of the spinal cord by tetanisation of the muscles of the hind limbs and Zuntz and Geppert came to the conclusion that the exciting agent in this increased activity was some acid substance or substances produced by the contracting muscles and transmitted from them through the blood stream to the respiratory centre. The subject has been lately investigated in this country by Haldane and Priestley. In a series of masterly experiments these observers show conclusively that the chemical messenger in this case is none other than carbon dioxide. The contracting muscle, when properly supplied with oxygen, takes up this gas and gives out carbon dioxide in direct proportion to the energy of its contractions. The carbon dioxide diffusing rapidly into the blood stream raises its percentage and, what is still more important, its tension in this fluid. The respiratory centre differs from the other parts of the central nervous system in having developed a specific sensibility to carbon dioxide. Its normal activity is determined by the normal tension of this gas in the blood and lymph bathing the centre. Diminution of the tension of this gas depresses the activity of the centre, causing slackening of respiration or even the total cessation of respiratory movements known as apnœa.

This work by Haldane may be regarded as finally deciding a question which has been the subject of debate for nearly half a century. The dyspnœa caused by the circulation of venous blood through the brain and by the deprival of the respiratory centre of the means of maintaining its normal gaseous interchanges has been variously attributed either to

oxygen starvation or to carbon-dioxide intoxication of the centre. Haldane shows that the centre is very little sensitive to changes in the oxygen tension of the blood. The oxygen tension in the pulmonary alveoli may be altered from 20 per cent. to 8 per cent., without any increase in the depth or frequency of the respiratory movements. In these circumstances the heart or circulatory system may feel the deprivation of oxygen before the respiratory centre has responded to it. On the other hand, a rise of only ½ per cent. in the tension of carbon dioxide in the alveolar air and therefore in the blood circulating round the respiratory centre will increase the volume of air respired 100 per cent.

This simplest of all examples of a coördination by chemical means of two widely separate organs may, perhaps, give us a clue to the mode in which the more complex of such correlations have been evolved. In this case the chemical messenger is a product of activity which is common to all protoplasm and must be excreted by the cell as a condition of its further activity. The special adaptation in this case therefore is not the formation of a special substance which shall exert a specific influence on some distant organ but the development in this distant organ of a specific sensibility to the common product of excretion of the first organ. We may, perhaps, assume that the more specialised messengers which we shall have to consider in detail later were at first accidental by-products of the selfish activity of the organ producing them, the first step in the development of a correlation being the acquisition of a sensibility to the substance in question by some distant organ.

The only other example of such a reaction, in which we know both the source and nature of the chemical messenger and the exact nature of the effects which it produces, is the suprarenal gland. Since the time of Addison we have known that atrophy of these glands in man leads to a disease characterised by the three cardinal symptoms of bronzing, vomiting, and extreme muscular weakness. Most of the attempts to reproduce this disease in animals have failed, owing to the fact that death follows the excision of both glands within 24 hours; the extreme muscular weakness is certainly produced, and this is attended by a profound fall in the general blood pressure. In 1894 Oliver and Schäfer showed that from the medulla of the suprarenals a substance could be extracted which, on injection into the circulation, caused marked rise of blood pressure and increased strength of the heart beat. Since the publication of these observations our knowledge on the nature and actions of this substance has progressed rapidly. The researches of Jowett in this country, of Abel in America, and of von Fürth in Germany, have shown that the active substance is a definite chemical compound derived from pyrocatechin and having the formula—



Takamine, by the elaboration of a method for its preparation from the gland in a state of purity, has placed in the hands of the druggist a means of supplying the substance in bulk to the medical profession for therapeutic purposes. The exact knowledge of the constitution of adrenalin thus acquired has paved the way for the actual synthetic formation of this substance. Here, again, there has been a keen international rivalry and the credit of its synthesis must be divided between this country and Germany. It is gratifying that the only original investigation of the subject which has yet been published as a contribution to science is the admirable account by Dakin of his synthesis not only of adrenalin but of a whole array of substances which are closely allied to this body in their chemical structure as well as in their physiological influence on the animal organism.

In order to comprehend the point of attack of adrenalin, the specific secretion of the medullary part of the suprarenal glands, we shall do well to go back to the mode of development of these organs. It was shown by Balfour that the suprarenals have in the fœtus a twofold origin, the cortex being derived from the mesoblastic tissue, known as the intermediate cell-mass, while the medulla is formed by a direct outgrowth from the sympathetic system, and consists at first of an aggregation of neuroblasts. In some animals—e.g., teleostean fishes—the two parts of the gland thus formed remain separate throughout life, but in the higher vertebrates the sympathetic outgrowth becomes surrounded by the cortex and the cells rapidly lose all traces of resemblance to a nerve cell. But the medulla is genetically part of the sympathetic system, and its specific secretion, adrenalin, has an action which is apparently confined to the sympathetic system. In whatever part of the body we test the effects of adrenalin we find that they are identical with the results of stimulating the sympathetic nerve fibres which run to that part. Thus, in all the blood-vessels of the body adrenalin causes constriction; the contraction of the heart muscle is augmented, the pupil is dilated, while the intestinal muscle, with the single exception of the small ring of muscle forming the ileo-colic sphincter, is relaxed. The action of the sympathetic on the bladder differs, as shown by Elliott, markedly in various animals; but, whatever its effect, a similar one will be produced in the same animal by the injection of adrenalin. I have already mentioned that excision of the suprarenal bodies causes a profound fall of blood pressure, which continues until the death of the animal, and it has been stated that when this fall is well established it is impossible to raise the blood pressure by stimulation of the splanchnic nerve or, indeed, to produce any effect at all on stimulation of the sympathetic nerve. Thus not only does adrenalin excite the whole sympathetic system in its ultimate terminations but its presence in the body as a specific secretion of the suprarenal bodies seems to be a necessary condition for the normal functioning, by ordinary reflex means, of the whole sympathetic system. We are dealing here with a problem which, betraying, as it does, an intimate relationship between nerve excitation and excitation by chemical means, promises by its solution to throw a most interesting light on the nature of the nerve process and of excitatory processes in general.

Our knowledge of certain other members of this group of chemical reactions is so shadowy that a mere mention of them will suffice. As an antithesis to the vaso-constrictor action of adrenalin we find that every organ when active is supplied with more blood in consequence of a vaso-dilatation of the vessels which supply it. In certain instances Bayliss and I have found that boiled extracts of organs when injected into the circulation may evoke vaso-dilatation of the same organs of the animal under investigation and we have suggested that the normal vaso dilatation accompanying activity is brought about in consequence of the specific sensibility of the arterial walls to the metabolites of the organ which they supply. Too much stress, however, cannot be laid upon these experiments since a more extended series by Swale Vincent has failed to give a general confirmation of our results.

The severe diabetes which, as shown by Minkowski, can be produced in nearly all animals by total excision of the pancreas has been held to denote the normal production in this organ of some substance which is indispensable for the utilisation of carbohydrates in the body. All efforts to obtain a more exact idea of the nature of this pancreatic substance or influence have so far proved in vain. Ordinary sugar, when placed in contact with extracts of muscular tissues, undergoes oxidation; and Cohnheim states that this process is much accelerated if an extract of pancreas be added to the extract of muscle. A repetition of Cohnheim's experiments by other observers has shown that the effect is so small as to be almost accidental; and we must therefore regard the nature of the pancreatic influence on carbohydrate metabolism and the causation of pancreatic diabetes as problems still to be solved.

So far (except in the case of the muscle—respiratory centre reaction) we have been dealing with isolated phenomena occurring in different parts of the body in which the reaction affects a whole series of tissues. The chemical stimulus in these cases might be considered analogous to alterations in the composition of the surrounding medium and the reactions lack that definite and localised character which we have learnt to regard as distinguishing the adaptations or reflex actions brought about by the intermediation of the central nervous system. We have now to discuss the mechanism of a whole series of chemical reactions where this feature of a nervous reaction is not wanting, so that, in fact, the reactions, up to quite recently, were regarded as undoubtedly nervous in character. I refer to the chain of processes in the alimentary canal by which the secretion of one juice succeeds that of another as the food progresses along this tube. This series of reactions may well form the subject of a separate lecture.

Lectures
ON
CARBOHYDRATE METABOLISM.

A Course of Advanced Lectures in Physiology, delivered at the University of London,

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LECTURE III.[1]

GENTLEMEN,—Absorbed from the alimentary canal and utilised in the tissues, how does carbohydrate pass from one locality to the other without giving evidence of its transit through the circulation by the filtering action occurring in the kidney? This is the problem that we have now to consider, and I think it will be found that we need not go further than the seat of absorption to meet with its solution. Let us closely examine the operations that can be shown to be here taking place.

We have seen that the object of digestion in preparing food for absorption is to break down the large molecular constituents of it and thus carry them from the colloidal into the diffusible state. It was formerly considered that this is all that is requisite, absorption being regarded as taking place in compliance with the laws of osmosis. The effect of modern research, however, is to show that it is by the instrumentality of cell action instead of by physical osmosis that the products of digestion pass into the system. Waymouth Reid by means of a number of well-devised and carefully conducted experiments has demonstrated that the integrity of the intestinal epithelium is necessary for the proper procedure of absorption. In the concluding paragraph of a paper on Intestinal Absorption of Solutions[2] he says, with reference to glucose, "it appears from a study of the absorption of weak solutions of glucose that, with the intestinal membrane as normal as the experimental procedure will permit, phenomena present themselves which are as distinctly opposed to a simple physical explanation as are those previously studied in the absorption of serum." Selective action has even been shown to be exerted in the absorption of salines and sodium chloride has been found to be taken up in a manner that can only be accounted for by special cell appropriation.

Absorption by cell action may be said to mean bioplasmic incorporation. The absorbed material passes into, and becomes a component of, the living matter. In other words it is assimilated or made to form a part of bioplasm in process of growth. Now, for bioplasmic growth it is requisite for the molecules which are taken on to be of appropriate configuration to become attached to the large and complex biogenic molecules of which they are to form a part. In the absence of the proper configuration they remain untouched, or otherwise expressed, fail to be assimilated. Thus, in the process of digestion, not only is it necessary that large molecules should be broken down into small ones to give the property of diffusibility for the sake of penetration but also that the molecules produced should be of such construction as to be adapted to unite with those into which they are intended to become incorporated. It is the province of the enzymes supplied by nature to bring about this adaptation and unless it is brought about there can be no combination. Saccharose molecules, for instance, have not the requisite conformation for being taken on by the biogenic molecules of protoplasm and unless there were enzyme action to put them into the state of monosaccharide they would remain untouched and simply be absorbed and pass through the system unchanged.

What I have said about preparation by enzyme action for being taken on by bioplasm applies to each of the food principles—proteid, carbohydrate, and fat. They all undergo breaking down into a molecular form suited to enter into combination with the bioplasm with which at the seat of absorption they are brought into contact. This having been accomplished the process that follows is one that may be designated bioplasmic growth and to this I will now direct attention.

Examination of the small intestine, the chief seat of absorption of the products of digestion, reveals a mucous membrane provided with an immense number of small projecting processes known as the villi. Each villus is provided with an epithelial covering and in the central part lymphoid tissue containing lymphocytes and capillary blood-vessels. The lymphoid tissue, a meshwork of intercommunicating spaces, gives origin to a vessel or vessels constituting an initiatory component of the lacteal system. The superficial epithelial cells and the lymphocytes met with in the lymphoid tissue are the structures which, I think, I shall be able to show play an all-important part in connexion with the absorption of nutrient matter.

The epithelial cells belong to the columnar type. In the fasting state they are seen to be characteristically of this form and to present a granular appearance with a well-defined central nucleus. In the actively absorbing state they may undergo alteration. Many of them may be observed to have lost their columnar form and to have assumed more or less of a spheroidal shape. They at the same time become charged with fat which is visible in very various-sized globules and granules. In this state the cell may present a close resemblance to the secreting cell of the liver which also is concerned with fat production. I entered into this subject in my "Physiology of the Carbohydrates, 1894," under the head of Transformation of Carbohydrate Matter into Fat, p. 245 *et seq.*, and gave photo-engravings to illustrate from the rabbit the fatty condition assumed by the villus cell after the ingestion of starchy food consisting of oats. Many of the cells were literally gorged with fat. At the present moment I will not follow this question further. Let it suffice to say that in connexion with the bearings of fat it is specially the epithelial cells of the villus that are concerned.

We now come to a component of the villus which I look upon as playing a most important rôle in connexion with the train of phenomena associated with the passage of food to service in the economy. I refer to the lymphocytes which are present in the lymphoid tissue belonging to the parenchyma of the villi and likewise in the submucous lymphoid tissue throughout the intestinal tract. They constitute small actively growing and proliferating cells which greatly increase in number during the period of absorption of food. Kölliker[3] as far back as the middle of the last century writing about them said: "While digestion is going on, we frequently find the whole parenchyma of the villi densely filled with nuclei, here and there surrounded by cell membranes [lymphocytes are evidently meant], elements which are, perhaps, never entirely absent in a villus but are at other times far fewer." It is only in connexion with the small intestine that this special condition is found. Both in the case of the stomach and large intestine a marked difference exists, no more lymphocytes being visible than may be seen in lymphoid tissue elsewhere.

Recently the lymphocyte question in relation to food has been looked at from another point of view. Many workers have been giving close attention to the corpuscular elements of the blood and a branch of study has been established which has already yielded much valuable knowledge and gives promise in the future of yielding more. When reaching the blood, as may be considered their natural course to do, they fall into the generic group that has long borne the name of leucocytes. In former times but little was known about this group of bodies but latterly by staining and improved manipulative procedure for microscopic examination means of differentiation have been afforded and different kinds of leucocytes are now enumerated. The lymphocyte is easily distinguishable from the other leucocytes and thus it can be made the subject of study in relation to varied bodily conditions. Now, by the counting observations that have been conducted it has been found that the blood undergoes considerable alteration with respect to the number of lymphocytes present as a result of the effect of food.

From the concurrent testimony of many observers it may be looked upon as a settled point that the lymphocytes become greatly increased in number in the blood after the ingestion of food. They show a continuous rise up to about the fourth or fifth hour and then a more or less rapid fall.

[1] Lectures I. and II. were published in THE LANCET of June 24th (p. 1704) and July 1st, 1905 (p. 4).
[2] Journal of Physiology, vol. xxviii., 1902.
[3] Manual of Human Histology, Sydenham Society Translation, vol. ii., p. 98.

Galland[4] speaks of the total number of lymphocytes per cubic millimetre having been found to have been increased by from 3000 to 11,000. This must mean a large accession of proteid matter to the blood as a result of food absorption. From 3500 to 4000 per cubic millimetre is mentioned as having constituted the ordinary starting point before food. Variable rates of increase are given by others but the general admission is that a very notable increase occurs. The condition, in fact, is of a sufficiently established nature to have received the designation of digestion lymphocytosis. This flow of lymphocytes into the blood naturally means, as I have already said, a great accession to it of proteid matter. Pohl[5] has given the calculation, which I may mention without expressing any opinion as to the value one way or the other to be attached to it, that 15 grammes represent the amount of proteid that may thus reach the blood after a meal.

Lymphocytes consist of proteid and proteid contains locked-up carbohydrate. In this way lymphocytes become mixed up with carbohydrate metabolism. There is no doubt about the lymphocytes reaching the blood as a sequence to the absorption of food. Examination of the blood obtained by a needle prick through the skin suffices to demonstrate the connexion. Prevailing ideas, however, regarding the mode of transit stand in a very tangled state. Looking at the perfection of the arrangement which nature has provided for the purpose it is strange that this should be so. Until some 30 years ago the lacteal system was regarded as constituting the channel for the transport of the absorbed nutrient matter from the alimentary canal into the blood, just as the general absorbent system was looked upon as conveying the unutilised portion of the pabulum that had escaped from the blood-vessels into the lymph spaces for the nourishment of the tissues. The confusion, I think, dates from Schmidt-Mülheim's work[6] in which the thoracic duct was ligatured and the urinary nitrogen elimination after nitrogenous food estimated and compared with that found in instances where the duct was free. According to the results given no essential difference was discernible. It would be out of place here to discuss this matter but I have looked into it and do not see that it by any means conclusively establishes the deduction that has been drawn and that has driven physiologists in seeking for something else to take refuge in what I feel may be spoken of as the impossible.

As a substitute for the view allocating the passage of the lymphocytes to the lacteal tract it has been suggested—and the idea carries credence at the present time—that they reach the circulation by traversing the walls of the capillary vessels. Even in the most recent work we find observers looking in the mesenteric veins for the lymphocytes produced in the villi. Could there be any conception more opposed to physical laws? Picture a lymphocyte, constituted as it is, passing from a lymphoid lacuna through the walls of a capillary against the pressure existing within. It is intelligible for leucocytes to pass through, as is known they do, in the opposite direction under the influence of the capillary blood pressure existing, just as mercury may be forced through the pores of chamois leather, but to traverse a membrane with pressure in operation against them seems to me to be nothing short of an impossibility. Presumably, it may be further said that even with proteid molecules the same governing factors bring about a corresponding result. Because under the capillary pressure, and apparently in proportion to it, proteid passes from the vessels into the lymph which bathes the tissue elements, it does not follow that it should be possible for the reverse to occur, or, in other words, for the proteid that has escaped nutritive appropriation in the lymph spaces, wherein there exists a lower pressure than in the capillaries, to pass back in a direct manner into the blood.

It is not disputed that lymph corpuscles are to be found in the contents of the lacteal vessels but it is considered that they have not been found in sufficient quantity to account satisfactorily for the digestion lymphocytes that reach the blood. There is a point in connexion with looking for them that appears to me not to have received proper attention, at all events I have never seen it alluded to. In the process of coagulation the lymphocytes become entangled in the coagulum in the same manner as occurs with the corpuscles of the blood, and the place to look for them is hence in the coagulum and not in the fluid. I am in the habit of preventing coagulation by the employment of a little citrate of potash and thus the examination is rendered much easier. The fact of lymphocytes being discoverable within the lacteal system affords proof that transport through this channel occurs. I can state from my own observation that they are to be found throughout the different parts of the lacteal system. It is not difficult to obtain chyle for microscopic examination that is on its way to the mesenteric glands and I can distinctly assert that lymphocytes are recognisable in it. They appear to be more numerous after the glands have been traversed. If lymphocytes are to be found passing along nature's channel it shows that this track is in actual use for the purpose, and hence it follows that any other mode of transit would be simply supplementary instead of one of absolute necessity. Now, seeing that the imaginary supplementary transit stands totally in antagonism with physical laws, can it for a moment be allowed to retain the position it at present holds? The granules constituting the molecular base of chyle and likewise fat globules pass. Of this there can be no possible doubt. Why, then, should there be any question existing with regard to the lymphocytes? The channel is more than sufficiently capacious to meet what is wanted for their passage and if some passed why should not all do so?

The flow through the lacteals is greatly increased at the digestion period. Although the contrary may have been asserted, yet in reality the matter does not admit of dispute. At a period of full fasting the vessels are not to be seen and are probably in a more or less completely empty state with attendant stasis. During active digestion and absorption, on the other hand, they stand out conspicuously and when incised give immediate exit to an abundant flow of chyle. In harmony with this state the villi are more prominent and loaded with lymph corpuscles. Notwithstanding former denials it may be considered that present-day work is in accord with this assertion.

The villi, then, may be regarded as a propagating and rearing ground for the lymph corpuscles I have been considering. They grow, I would say, upon the nutrient matter derived from the digested food like yeast cells grow in a suitable pabulum or bacilli in a culture medium. Developing in this way and travelling along the lacteal tract they become carriers of assimilated food principles into the system and reaching the circulation pass under the denomination of digestion lymphocytes. I will not at the present moment enter into the question of what subsequently becomes of these corpuscles. As yet I have only dealt with them morphologically, but I have to speak of the chemical bearings belonging to them and it will be convenient to reserve what I have to say about their destination until after these have been considered.

Lymphocytes consist virtually of little masses of bioplasm and the property of bioplasm is to assimilate or to incorporate within itself matter which is suited for the purpose. They may be compared to unicellular organisms and may be said to grow independently upon the nutrient matter around them. In this growth the molecules of the nutrient matter become linked on to the proteid molecules of the augmenting bioplasm in a manner to lead to the extension that ensues. For this a reciprocal relation must exist between that which is taking on and that which is taken on, and it is by enzyme action that provision is made for bringing about the required relationship condition. This having been effected the union takes place by virtue of affinity—a power by which atoms and molecules are drawn into chemical combination and therefore a power of supreme importance in the domain of chemistry.

We know how some atoms and molecules when brought together enter into chemical union whilst others show no disposition to do so. We know also where affinity exists that it does so under very varying degrees of strength. The effect of affinity is conspicuously realisable in the inorganic kingdom. It is not so self-evident in connexion with the organic kingdom but nevertheless I take it that it stands at the foundation of the combinations that occur. The expansive power of a growing structure may be very great, as is made manifest by the damage of building constructions sometimes perceived to be occasioned by the growth of trunks and roots of trees. I remember upon one occasion having seen a heavy paving stone raised out of place by a ramified fungus growth underneath. Instances of this kind bring home to us the fact that in the molecular combination associated with

[4] Brit. Med. Jour., vol. ii., 1904, p. 524.

[5] Archiv für Experimentelle Pathologie und Pharmakologie, Bnd xxv., 1889.

[6] Archiv für Anatomie und Physiologie, 1877.

growth there must be no mean amount of attraction force at work.

In the lymphocyte bioplasm then there exists the aptitude for taking on the food molecules to which the requisite configuration has been given by enzyme action. Peptone is representative of the nitrogenous portion of the food and glucose of the carbohydrate. They both are found on absorption to disappear. Hofmeister,[7] commenting on the disappearance of peptone, suggested that it was taken hold of by the lymphocytes and that bound up in these it could traverse the circulatory system without filtering off when passing through the kidneys. Pohl[8] speaks of the proteid of the food being first broken down by digestion and then built up again by the lymphocytes into the proteid specifically belonging to the animal in which the action occurs. The lymphocyte, he adds, must subsequently become dissolved in blood plasma or be taken by the tissues. A. Mathews, in an article on the Origin of Fibrinogen,[9] enters into the question of the transformation of food proteids into blood proteids, refers to Schmidt's and Mörner's observations pointing to paraglobulin being derived from disintegrating leucocytes, and himself adduces evidence suggestive of leucocytes being the source of fibrinogen.

All this touches upon the point that is before us, which is the function of the lymphocyte in assimilating digested foodstuff and what subsequently becomes of the assimilated material. It will be noted that in the views of the various authorities which have been mentioned reference is only made to the peptone product of digestion. I have to suggest that the action should be extended and made to embrace carbohydrate—that carbohydrate and peptone stand upon the same footing as regards the manner in which they are dealt with by the growing bioplasm of the intestinal lymphocytes, that both become linked on to the biogenic molecules of the lymphocyte and thus made to enter into the constitution of living matter in which the various chemical changes of metabolism are wrought out. Hofmeister's remark about peptone being placed by the assimilative action of the lymphocytes into a position to traverse the circulation without filtering off with the urine applies with equal force to sugar, of which it may without hesitation be said that if it is to be available for service in the economy it must not be permitted to enter the circulation in the small molecular form represented by sugar.

Under the view set forth the food principles are in the first instance constructed by assimilative action into the principles of the blood. The step that follows is that the tissues derive their nourishment from the elaborated principles of the blood. The blood feeds upon the food supplied from without and the tissues feed upon the blood. I do not see that we can deny to the blood with the standard composition it possesses an inherent assimilative power comparable to that possessed by the tissues. I take exception to the view expressed in a recent communication to the Pathological Society by Dr. W. D. Halliburton.[10] Reference is made in it to the success that has attended Emil Fischer's efforts to synthesise some of the lower cleavage products of proteolysis and it is suggested that a more complete breaking down of proteid occurs in the alimentary canal than has been hitherto supposed, erepsin being specified as the enzyme which has the power of carrying peptones into more rudimentary cleavage products. The new theory is stated to assume a complete breaking down of the foodstuffs previously to their being built up into the living tissue. What, it may be asked, would be the condition of the blood if such a view held good? Instead of a component of the system with as much of a standard constitution as muscle and other structures it would consist of an agglomeration of small molecules in transport to the tissues and in a position to filter off with the urine in passing through the kidney. What also would be the use of the elaborated proteids of the blood if the broken-up foodstuffs were directly conveyed to the tissues and there synthesised? As far as I can see everything stands against the correctness of such a view and what may be said clearly to be wanted is that the synthesis should take place preparatory to entry into the blood.

Because the chemist can as yet only synthesise the more rudimentary molecules into higher combinations it is not to be argued that nature is in the same position. We lack the power of forging the implements by which nature's work is performed. When we get hold of, and apply, these implements—as, for instance, when we operate with enzymes—we can achieve in our laboratory experiments the same that is effected inside the living organism. There are grounds for believing that chemistry works upon the same basis in the organic and the inorganic kingdoms of nature. Affinity and adaptability in molecular configuration are at the root of chemical union and the difficulty in bringing about a desired chemical union in manipulating with the complex organic molecules is intelligible when we look at the intricacy of the conditions that require to be met with respect to molecular configuration. Fischer's simile of lock-and-key arrangement in the fitting together of molecules brings home to us the severity of the conditions that must exist where highly complex molecules are dealt with. The slightest deviation in any particular from the required construction would suffice to throw out the adaptability for union. If the adaptability between the complex peptone molecule and the taking-on molecule of the lymphocyte bioplasm exists, as I consider there are grounds for believing it does, there would be no reason for the proteolysis of digestion to be carried further.

Let me show how the line of argument that has been set forth harmonises with what is taught in connexion with the chemistry of the doctrine of immunity. For this I will quote from Ehrlich's Croonian lecture, published in the Proceedings of the Royal Society for 1900, and will premise by stating that foodstuff and toxin molecules are looked upon as standing in an allied position in relation to the assimilating protoplasmic molecules. At p. 433 Ehrlich says: "We may regard the cell quite apart from its familiar morphological aspects and contemplate its constitution from the purely *chemical* standpoint. We are obliged to adopt the view that the protoplasm is equipped with certain atomic groups, whose function especially consists in fixing to themselves certain foodstuffs of importance to the cell life. Adopting the nomenclature of organic chemistry, these groups may be designated side chains. We may assume that the protoplasm consists of a special executive centre (Leistungs-centrum) in connexion with which are nutritive side chains which possess a certain degree of independence and which may differ from one another according to the requirements of the different cells. And as these side chains have the office of attaching to themselves certain foodstuffs we must also assume an atom-grouping in these foodstuffs themselves, every group uniting with a corresponding combining group of a side chain. The relationship of the corresponding groups, i.e., those of the foodstuff and those of the cell, must be specific. They must be adapted to one another as, e.g., male and female screw (Pasteur) or as lock and key (E. Fischer). From this point of view we must contemplate the relation of the toxin to the cell."

I have spoken of the digestion lymphocytes as little collections of bioplasm growing upon the prepared nutrient principles of the food. I consider that in the exercise of their assimilative or taking on office they deal alike with the products derived from proteid and from carbohydrate matter, and therefore what is said about the action occurring in the one case is applicable to the other. Do not the other leucocytes belonging to the blood stand in a similar position in relation to assimilative action? The phagocytes have acquired a renowned reputation through their power of devouring bacilli and other foreign particles and subsequently disposing of them in the same way that the amœba engulfs its food and then digests and makes use of it. This means that assimilation is brought into play and if assimilation is thus put into operation it is only reasonable to infer that it can be applied to surrounding molecules of any description that possess the requisite conformation for being assimilated. Upon such ground the leucocytes may be regarded as constituting the assimilative agency or the living element of the blood, giving to it the general power that is possessed by living matter elsewhere. Thus products which may incidentally reach the blood, either from ingestion or from the tissues, that are susceptible of utilisation may become assimilated and placed in a position to be subsequently made use of. The lymphocytes of the lymphoid tissue, I take it, may be regarded as performing the same kind of duty by assimilating the utilisable products of retrograde tissue metamorphosis and rendering them fit for further use.

We now come to a point which, although an important one, seems to have received but scant consideration by physiologists. In what way do the fibrinogen, globulin, and

[7] Zeitschrift für Physiologische Chemie, Band v., 1881.
[8] Loc. cit.
[9] American Journal of Physiology, vol. iii., 1899.
[10] THE LANCET, March 18th, 1905, p. 717.

albumin of the blood take origin? They are highly complex proteids and can only be conceived to arise through the instrumentality of bioplasm. Applying the mind to the matter the following train of reasoning suggested itself to me. I took it for granted that they may be considered as having a close connexion with the food and that there must be some intermediate living agency in operation to produce them. Seeing that lymphocytes constitute a living growth constructed out of the elements of the food, that there is an active flow of them into the circulation connected with food ingestion, and that there is afterwards a melting away of them to be observed, it seemed that in these circumstances a groundwork was presented suggestively affording a solution of the problem before us. May we not look to the gland cell to help us analogically in the matter? The gland cell consists of bioplasm which, in this instance, has grown upon nutrient matter derived from the blood. As part of its life it undergoes autolysis and gives its formed material to its associated secretion. Lysins now constitute a well-known class of implement constructed by nature for the execution of her work and it may be taken that a special lysin is provided for each of the different operations to be carried out. By autolysis of the lymphocytes the material built up by them from the elements of the food would be given to the blood and may not the autolysis occur in such a manner as to lead to the evolution of the proteids of the blood, which in their pabulum character stand in an intermediate position between the food and the tissues? That tissue is in reality built up and maintained by proteids such as those in the blood is shown by the fact that in the egg they unmistakeably constitute the medium from which the tissues of the developing chick derive their nutrient matter. Food into lymphocytes, lymphocytes into proteids, proteids into tissue substance, may be taken as representing the chain of physiological connexion between the food and the tissues.

In support of the view that has been expressed I have found on looking through the literature of the subject since the idea was framed that A. Mathews,[11] to whose work I have already referred, has adduced experimental evidence in favour of leucocytes constituting the source of fibrinogen and in his paper he alludes to the work of Alexander Schmidt [12] pointing to the likelihood of the paraglobulin of the blood being derived from leucocytes and likewise to that of Lilienfeld and Miescher [13] suggesting the same source for the serum albumin.

The point that has been discussed has a bearing on the application of proteid to energy production. It has long been known that the elimination of urea stands in relation to the proteid food ingested and it is considered that the proteid molecule splits up into a non-utilisable nitrogenous portion which is discharged as urea and a complementary utilisable residue which, whether assuming the form as has been suggested of carbohydrate or not, may be reckoned to contribute to energy production. It has been difficult to conceive that this combustion proteid passed into the tissues for the purpose of being broken down. Looking upon the process as occurring within the lymphocyte there is nothing that appears incongruous and it is noticeable that the increased urea elimination about harmonises with the period of maximum lymphocyte autolysis.

As yet I have only spoken of the assimilation of carbohydrate by being built up into proteid through the agency of bioplasm. Probably when there is no particularly large supply of carbohydrate this is the main result that occurs. When, however, the supply is extensive it is evident that some escapes being disposed of at the seat of absorption and thence reaches the portal blood. At a period of fasting and likewise after the ingestion of animal food the portal blood, as regards the amount of sugar present, corresponds with that belonging to the other parts of the circulatory system. After a free supply of starchy food, however, sugar may be found to be present in the portal blood to a considerably larger extent than anywhere else. In my "Physiology of the Carbohydrates" I entered somewhat fully into this matter and gave a number of experimental results obtained under different conditions with regard to food. The presence of about 2 per 1000 or a little over was of not uncommon occurrence. In two instances figures amounting to 4 per 1000 were met with.

[11] American Journal of Physiology, vol. iii., 1899.
[12] Zur Blutlehre. Leipsic, 1892.
[13] Hoppe-Seyler's Medicinische-Chemische Untersuchungen, Band iv., p. 441.

The sugar which escapes assimilation at the seat of absorption and reaches the portal blood is conveyed to the liver wherein it is brought into close relation with the cells of the organ. By these it becomes absorbed and transmuted into glycogen. There is overwhelming evidence to show that this action occurs and if it is complete, as it ought to be, sugar from the food is prevented from reaching the general circulation. It will be seen from the arrangement existing that there is a double provision against the entry of sugar from the food into the general circulation. Whatever may pass the first line of obstruction has to confront the arresting action of the liver. In this way security is provided against the systemic blood receiving an influx of sugar at every meal into which carbohydrate enters.

I look upon glycogen as simply a cleaved-off storage material standing in identically the same position as fat. I think it may be said that we may rightly consider that the sugar is taken on by the bioplasm of the cells and by it transmuted into, and thrown off as, glycogen. This kind of operation is one of the commonest of the operations occurring in connexion with living matter. Starch, cellulose, and a multiplicity of other products are cleaved off from a pre-existing biogenic complex into which something other than the cleaved-off principle has passed in. Ordinary enzyme action is attended with taking on in one form and throwing off in another. Looked at in this way there is nothing mysterious or incomprehensible about the position that glycogen holds and its position in the liver is not different from that which it holds in the numerous other localities in which it is met with. Its presence only means disjoined carbohydrate collected as redundant material in the locality where it is found. The supply of carbohydrate is in excess of utilisation and the surplus is thrown off as glycogen for temporary storage. Yeast cells contain glycogen and it has been noticed that when growing in a 1 per cent. solution of glucose there is only a small amount to be found present, whilst when growing in a 10 or 20 per cent. solution there is much. In the case of the liver it is common knowledge that its glycogen varies with the amount of carbohydrate food-supply. Diminishing the consumption going on by reducing the activity of a part promotes accumulation and conversely increasing the activity leads to diminution. For instance, division of the nerve or tendon of a muscle is followed by an accumulation of glycogen and tetanising the muscle by a diminution.

By severe forced exercise it is found that glycogen may be made to disappear, alike from the liver and muscles, in the course of a few hours without any show of the production of sugar. The seat of actual consumption is in the muscles and therefore in the case of its disappearance from the liver there must be transport in some way or other through the circulatory system. To this point I will give attention.

The outcome of all modern work is pointing in a very strong manner to the taking on and throwing off capacity of organic matter constituting an exceedingly widespread principle of action. I have purposely said organic and not bioplasmic matter, for in the action of enzymes, which can hardly be considered as representatives of bioplasm, have we not a taking on in one form and throwing off in another action to deal with? It is, indeed, difficult to see how the action of an enzyme differs from that which is ordinarily looked upon as constituting a special attribute of living matter. I may even go a step further and say it is difficult to see how the illustrations, which at the present moment are being brought forward by chemists under the head of inorganic ferment action, differ in nature from the occurrences associated with ordinary organic ferment action. Applying the principle of action to which I have been alluding to the point under consideration the suggestion presents itself that sugar is taken on as a side chain by a proteid constituent of the blood and transported to the tissues where it is taken off for subjection to utilisation. The suggested operation is identical with what occurs in connexion with the transport of oxygen. Oxygen is taken on by hæmoglobin and in a state of combination transported to the tissues where it is taken off and applied to utilisation. Glycogen is a storage material consisting of very large molecules and therefore not adapted for shifting its position. I should think that the first action that occurs is the breaking down of its molecule into molecules of glucose which become instantly taken on by the alluded to molecules of the blood. There may be concerted action between the breaking down and taking on processes and this is rendered

probable by the fact that there is no show of sugar in connexion with the occurrence. Enzyme action, it may be considered, of necessity constitutes a part of the process and the enzyme concerned and set into motion as needed may in the presence of altered conditions be intelligibly conceived to be capable of producing the deviation from the natural living state that so quickly takes place as a post-mortem occurrence in the liver.

The phenomena connected with phloridzin glycosuria afford confirmatory evidence in relation to the view that has just been expressed. Volume XXIX., 1903, of the *Journal of Physiology* contains a communication by Pavy, Brodie, and Siau on the Mechanism of Phloridzin Glycosuria in which the point in question is dealt with. The conclusion we arrived at from the experimental work performed was that the sugar eliminated is derived from the katabolic action of the renal cells on a constituent of the blood containing sugar in a locked-up state. This idea was previously mentioned at a meeting of the Pathological Society in April, 1902. Loewi [14] has expressed a similar idea and has even gone the length of suggesting that the sugar which is ordinarily looked upon as being in a free form in the blood is in reality in a loosely combined state when the blood is circulating in the body. We did not commit ourselves to agreeing with this proposition, although otherwise we stood in accord with him. It is clearly established that the glycosuria produced by phloridzin is not due to hyperglycæmia and it hence follows that there must be something in the blood to yield the sugar. The first effect of the phloridzin is to sweep away the glycogen that is present in the body. If this passed through the circulatory system as free sugar there ought to be hyperglycæmia in proportion to the glycosuria, which there certainly is not. This being the case, the only conclusion that can be drawn is that the katabolised glycogen (sugar) enters into side chain or loose combination with a constituent (proteid) of the blood and is thus conveyed to the kidney where it is set free and eliminated.

For a great number of years cases of diabetes have from time to time been noticed to have been associated with disease of the pancreas and the feeling has been entertained that a connexion existed between the two. Experimental physiology has since stepped in and shown indubitably that diabetes is producible by extirpation of the pancreas, and the view has been formulated that normally the organ supplies an internal secretion which contributes to the proper disposal of carbohydrate matter in the system. To the islands of Langerhans has been assigned this function and weighty evidence has been adduced in support of the correctness of the view that has been taken. Lépine a long while ago contended that a glycolytic ferment was derived from the pancreas which was instrumental in effecting the destruction of the sugar assumed under the glycogenic doctrine to be constantly reaching the blood, and that the absence of the ferment was the source of diabetes. His view has not received acceptance and I do not consider that I need further allude to it. More recently Otto Cohnheim has conjectured that the pancreas supplies an activator to the ferment which, he says, exists in the muscles for the oxidation of sugar. In view of the anticipated therapeutic value of his pancreatic product in connexion with diabetes it has been made a patented article. Much adverse criticism of his work, however, has been called forth and I myself feel that the matter stands upon a wrong basis. With the assistance of Mr. Bywaters I have entered experimentally into the subject and the evidence that has been obtained has not been of a confirmatory nature.

The work that has been conducted by others has been directed to the side of the destruction of sugar. No one has viewed the subject from the side of the assimilation of sugar, but it seems to me that this is the aspect from which it should be looked at. Enzyme action is concerned in building up as well as in breaking down and an activator is wanted for enabling the bioplasm of the intestinal tract to perform its work in connexion with the assimilation of the absorbed sugar. Let me proceed to explain the matter from the standpoint that I view it.

It has been recently ascertained that enzymes are dual bodies. One portion is insoluble in alcohol, non-diffusible, and destructible by heat. This probably is of a proteid nature. The other—the co-ferment or activator—is usually soluble in alcohol, diffusible, and can be boiled without losing its activity. It corresponds with the active agents that are obtained from the thyroid, suprarenal capsule, &c. A great advance was made when Buchner discovered that the expressed juice of yeast contained the ferment zymase which converts sugar into alcohol and carbonic acid. Harden and Young,[15] in experimenting with zymase at the Lister Institute, have found that a given quantity of fresh yeast juice has its ferment power doubled by the addition of an equal volume of boiled juice. This means that an extra quantity of the activator, which is powerless by itself, gives increased power to the ferment principle in the juice. In a further experiment the yeast juice was subjected to filtration through a Martin's gelatin filter. Neither the filtrate nor the residue on the filter dissolved in water was capable of inducing fermentation, but when they were mixed together they produced fermentation almost equal in extent to that produced by the original juice.

Let it be supposed that the activator supplied by the pancreas is wanted to enable bioplasm to take on or to assimilate sugar. It may be assumed that there is always a certain amount of it in normal circumstances distributed through the system and ready for use. I have long known that the introduction of sugar into the circulatory system was followed by the presence of an increased amount of amylose carbohydrate in the blood, and commented upon the point in my "Physiology of the Carbohydrates." With the information that is now before us the idea is suggested that a portion of the introduced sugar is appropriated by the bioplasm of the leucocytes and converted into proteid carbohydrate. I will draw attention to a tabular arrangement of results showing the amount of amylose carbohydrate found in the blood of rabbits taken ordinarily and in that of rabbits subjected to experimental injection:—

Amylose Carbohydrate from Rabbit's Blood expressed as Glucose in parts per 1000.

Normal blood.	Time between injection and killing.	After intravenous injection of—			
		Saline solution.	1 gramme per kilogramme of—		
			Dextrose.	Lævulose.	Galactose.
1·39	15 minutes	1·35	1·60	2·67	1·74
1·34	—	1·35	1·53	—	1·93
1·39	—	—	1·52	—	—
1·52	—	—	1·60	—	—
1·39	—	—	—	—	—
1·40	30 minutes	—	1·62	2·60	—
1·46	—	—	—	—	—
1·25	60 minutes	—	1·34	1·81	—
1·55	—	—	1·43	—	—
1·44	—	—	—	—	—
1·41	—	—	—	—	—

It will be seen that in no case did the amylose carbohydrate exceed 1·55 per 1000 in the normal blood whilst in some of the instances after the injection of the sugars the figures stand considerably higher. Dilution of the blood would be occasioned by the injection and the effect of this with the animal killed shortly afterwards would be to reduce the proportionate amount of amylose carbohydrate. The condition found to exist at the end of 60 minutes is interesting. It shows that with the advance of time there is a tendency for the effect of the injection to work off.

In another set of experiments pancreatic extract was

Amylose Carbohydrate from Rabbit's Blood expressed as Glucose in Parts per 1000.

Time between injection and killing.	After intravenous injection of—			
	Pancreatic extract alone.	Pancreatic extract and 1 gramme per kilogramme of—		
		Dextrose.	Lævulose.	Honey sugar.
5 minutes	—	—	1·75	—
15 "	1·77	2·47	—	2·16
—	—	1·85	—	1·96
—	—	1·70	—	—
—	—	1·68	—	—
—	—	2·39	—	—
—	—	2·19	—	—
—	—	1·77	—	—
—	—	2·00	—	—
—	—	2·35	—	—
—	—	1·57	—	—
—	—	2·08	—	—
30 minutes	1·62	2·12	2·22	—
—	—	2·21	1·74	—
45 minutes	—	—	2·56	—

[14] Archiv für Experimentelle Pathologie, vol. xlviii., 1902, p. 410.

[15] Journal of Physiology, vol. xxxii., 1904.

injected in association with the sugar. The extract was prepared by mixing the pancreas, which had been pounded with sand, with water, boiling, and filtering. The amount of extract used was such as to give a relation of about one gramme of pancreas per kilogramme of body-weight. The results have been arranged in a tabular form. After raw extract of pancreas and one gramme per kilogramme of dextrose, which immediately caused death, the figures given were 1·04 per 1000.

Other experiments were conducted in which the sugar and extract were injected subcutaneously instead of intravenously. The results have also been arranged in a tabular form.

Amylose Carbohydrate from Rabbit's Blood expressed as Glucose in Parts per 1000.

Time between injection and killing.	After subcutaneous injection of pancreatic extract and 1 gramme per kilogramme of—		
	Dextrose.	Lævulose.	Honey sugar.
1 hour	1·63	2·30	—
—	2·09	—	—
—	1·62	—	—
2 hours	1·77	—	1·49
—	1·83	—	1·74

Taken altogether a long list of experimental results is presented for grounding a judgment upon. The same method of procedure was adopted in all the experiments. Unmistakeably different figures are seen to have been obtained after the injection of pancreatic extract and sugar from those yielded in the other experiments. The effect of the employment of the pancreatic extract is suggestive of its holding a corresponding position to the activator in the yeast juice experiments that have been referred to. It will be noticed that in one of the experiments raw pancreatic extract was employed and that immediate death followed. In this experiment there was no elevation of the figures.

I have only dealt with one of the methods of disposal of carbohydrate in the animal system. There is another and it evidently must be regarded as holding a highly important position. I refer to the transformation of carbohydrate into fat, a process upon which an extensive industry is founded, seeing that it is at the basis of the fattening of animals with carbohydrate food. I gave consideration to this process in my "Physiology of the Carbohydrates" and showed that the superficial epithelial cells of the villi and the liver cells may be regarded as constituting the operative agents. To the lymphoid cells then of the villi I assign the office of metabolising carbohydrate into proteid and to the epithelial cells that of metabolising it into fat.

A few words in conclusion regarding diabetes. Viewed from the standpoint that I have taken it is the result of a wrong carbohydrate metabolism on the side of assimilation and in some cases on that of breaking down as well. In the "alimentary" form of the disease the carbohydrate fails to be properly assimilated and prevented from reaching the circulatory system in the small molecular state of sugar. In the "composite" form there is defective assimilation and at the same time a faulty tissue breaking down. The carbohydrate, which has been locked up in combination, instead of passing on to proper oxidation becomes liberated as free sugar and thence escapes from the system as waste material. As long as carbohydrate is properly assimilated and sugar is thus prevented from reaching the general circulation there can be no sugar passing into the urine from the food. Let the assimilative process fail and immediately sugar finds its way into the circulation and thence into the urine, just as if it had been directly introduced by an intravenous injection.

THE SPA TREATMENT OF CIRCULATORY DISORDERS.

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SINCE the introduction of what is known as the Nauheim system into this country and the rather comprehensive claims originally put forward on its behalf the spa treatment of circulatory disorders has been in danger of becoming synonymous with effervescent baths and resistance exercises. As the application of this system is in reality very limited, and as its popularity threatens not only to damage the system itself but also to obscure the real advantages to be obtained from properly directed health resort treatment, the time seems favourable for a brief review of the whole question.

With regard to the Nauheim treatment itself, it is perhaps unnecessary to insist that it can be obtained elsewhere than at Nauheim. At Buxton, Bath, Harrogate, Sidmouth, Leamington, and Llangammarch, to mention but a few of our own health resorts, the baths and exercises can be carried out with intelligence and circumspection by physicians experienced in the treatment; and in London, as well as in a great many of the large provincial centres, the system can be applied at institutions and nursing homes by efficiently trained attendants. To reach Nauheim it is necessary to undertake a journey of nearly 24 hours' duration and even when this has been successfully accomplished the conditions in which the patient finds himself are by no means ideal. The town, it is true, is well drained, the water-supply is good, and the accommodation excellent, but the climate is unsatisfactory. Lying as it does at the foot of the Johannisberg and fully exposed to the east its rainfall is heavy and it is liable to sudden and decided changes of temperature. It is a summer resort, the season lasting from May till September, but the east winds which often prevail in May render that month unsuitable; the rains in September are generally severe, and the heat during July and August is not infrequently unbearable. From the points of view of climate and accessibility therefore Nauheim is by no means a place to which a cardiac patient should lightly be advised and he who neglects these elements in the selection of his spas does much to jeopardise his credit.

Of the treatment which has made the place famous it may be said at once that useful as it undoubtedly is in suitable cases the number of those cases is not large. As everyone now knows this treatment consists in the administration of cold or tepid saline baths which evolve a considerable quantity of carbonic acid gas, combined, usually, with resistance exercises and, occasionally, with graduated hill-climbing on the principle known as the Terrain-Kur of Oertel. So far as the last two items are concerned, and they are, from the researches of Oliver, Leonard Hill, Lauder Brunton and Tunnicliffe, probably by far the most important factors in producing the results, they are neither peculiar to, nor did they originate at, Nauheim. As long ago as 1854 Dr. Stokes of Dublin[1] wrote as follows: "The symptoms of debility of the heart are often removable by a regulated course of gymnastics or by pedestrian exercise, even in mountainous countries such as Switzerland or the Highlands of Scotland or Ireland..... During the first period of the day the patient suffers from dyspnœa and palpitation in an extreme degree, but by persevering without over-exertion or after a short rest he can finish his day's work and even ascend mountains with facility." 30 years later Oertel[2] of Munich developed the idea thus expressed and it was put into practical application at several health resorts, notably at Reichenhall and Ischl. Exercises and gymnastics were also used by Saeterburg of Stockholm and Zander as early as 1862 with excellent results.

In considering the system there remain then to the credit of Nauheim's initiative in cardio-therapeutics the saline effervescing baths about which so much has recently been heard. We are fortunately beyond the time when the remedial effects of waters applied externally can seriously claim to be due to some occult subterranean chemical combination. In the matter of drinking waters we have still to admit that chemistry fails to supply us with satisfactory reasons for their physiological activities but where application to the external surface is concerned we are dealing less with chemistry than with physics and we are therefore able to explain the results with considerable accuracy in terms of thermic, mechanical, and other forms of stimulation. The Nauheim waters as used for bathing contain, according to Weber,[3] "about 2 to 3 per cent. chloride of sodium, two to three per mille chloride of calcium, some bicarbonate of iron, and much carbonic acid gas," and they are applied at temperatures varying from 95·5° to 82° F.

The physiological effect of these baths, as may readily be understood from their stimulant constituents and their low temperature, is to increase blood pressure. It is also claimed that they exercise, by way of the cutaneous nerve endings, a

[1] Diseases of the Heart and Aorta, p. 357.
[2] Ziemssen's Cyclopedia, 1884.
[3] The Mineral Waters and Health Resorts of Europe.

reflex effect upon the centres which control the force and frequency of the cardiac systole, resulting in an increase of the former and a decrease in the latter. This is a claim which may in some degree safely be conceded to them; their chief effect, however, is that of increasing the intravascular tension. This has been denied by some writers who have not apparently understood that in so doing they were endeavouring to explain away the chief merit of a measure in whose cause they were appearing as enthusiastic champions. Increase of blood pressure, as everyone is aware, induces a slower and stronger cardiac systole, because the heart is stimulated to overcome the resistance. The duration of the baths is so managed that the stimulation is never allowed to approach the point of exhaustion; the effects are therefore maintained for a considerable time after its cause is removed. By repetition of the process these effects become increasingly pronounced owing to the heightened tone in the peripheral vessels induced by the cutaneous stimulation. We have, in fact, in these baths, as managed by a thoroughly experienced physician, a cycle of results almost exactly analogous to that produced by the action of digitalis, with this in favour of the baths that there is little danger of cumulative action or an overdose and none whatever of unpleasant consequences in the digestive tract. It is also true that the favourable results of the baths last much longer than the same results when secured by the use of the drug. In the light of this analogy it is not difficult to fix the limitations of the therapeutic value of the baths, which were, indeed, indicated by Sir William Broadbent[4] as long ago as 1897 in the following passage: "In cases of cardiac dilatation from loss of tone of the heart muscle after influenza or some depressing disease it (the system) may be of great service and effect a cure where drugs and other treatment have failed; in many cases of functional and neurotic heart disease, which are very common and are difficult to deal with, it may also give satisfactory results. In valvular disease it is, of course, unnecessary when compensation is established and no symptoms are present; when compensation has completely broken down it is not advisable as rest in bed and suitable treatment by other means will be more efficacious. In cases of mitral disease, more especially mitral stenosis, when compensation is just maintained with difficulty and when the degree of stenosis is such that increased contractile power of the right ventricle induced by digitalis would be useless or harmful, it may be of great service In aortic disease it is not advisable, owing to the risk of syncopal attacks, though when compensation is breaking down and mitral symptoms are present it may sometimes yield good results." These views are substantially supported by the latest writer on the subject,[5] who, though an enthusiast, tempers his enthusiasm with a very commendable and quite unusual amount of discretion. Dr. Leslie Thorne selects as examples of those cases for which permanent or pronounced benefit may be expected, the dilated, enfeebled, and irritable heart with unimpaired valves such as is common after influenza, typhoid fever, and other exhausting illness, the tobacco heart, and those with valvular disease in which from similar causes compensation is threatened; those cases, in fact, in which it is not only desirable but safe to increase the peripheral resistance so as to stimulate the heart to stronger and more efficient contraction.

And here it is pertinent to observe that the mere presence of dilatation, irrespectively of its cause, does not, as is so often erroneously supposed, constitute an indication for the employment of the Nauheim treatment, any more than it constitutes an indication for the exhibition of digitalis. Such treatment is suitable only for those cases where the dilatation is but a part of a general asthenia, as after diseases like influenza; or when it is the result of acute overstrain, abuse of tobacco, chlorosis, or the "fatigue products" of Clifford Allbutt. Such conditions constitute in reality, however, a very small proportion of the cases of dilated heart which come under notice. There is no such thing as primary or idiopathic dilatation and where the dilatation is not due to such causes as those just mentioned it is the result of undue resistance in the systemic periphery. In such circumstances to stimulate the heart without removing the resistance is merely to flog an overtired horse and to hasten the impending collapse. Of course, the undue resistance in the periphery may be merely relative, in the sense that the normal tone of the systemic vessels may suffice to offer a degree of resistance to the crippled central organ which it is beyond the power of the latter efficiently to overcome. Such a state of matters not infrequently arises in hearts the integrity of whose valves has become impaired by rheumatism and other acute specific diseases, especially as the result of shock, anxiety, worry, and other nervous influences. In such cases, though the Nauheim treatment may do good, it may, unless it is applied with a great deal of care and circumspection, do an infinity of harm; for the increase of the intravascular tension, instead of affording the desired stimulus to the cardiac contractions, may very easily provide the last straw in the tale of the heart's burden. In such cases the exercises alone, combined with drug therapeutics, are very useful but the baths should be reserved to a later period and even then the patient should be confided to the care of a physician, preferably at a health resort, who is exceptionally experienced in their administration.

The treatment by Nauheim baths is thus quite unsuited to the great majority of cardiac disorders which present themselves to the physician and its indiscriminate recommendation, even where dilatation is the most prominent objective feature, is by no means free from danger. It is fortunately no longer necessary to combat the preposterous claims which were at one time advanced to the effect that these baths were capable of a favourable influence upon aneurysm and angina pectoris from whatever cause arising. The "accidents" which have resulted from an over-abundant faith in these claims have been sufficiently numerous and startling to give pause even to the enthusiasts. The real truth of the whole matter may be summed up in saying that, as a rule which admits of very few exceptions, spa treatment is not suited to organic circulatory disorders where compensation is imperfect and that functional circulatory disorders, though sometimes conspicuously amenable to effervescent baths, are usually much better and much more scientifically treated by means other than those which are commonly associated with Nauheim. In order to appreciate this position it is necessary to realise not only the true nature of the problem which cardiopaths are liable to present, but also the nature and the degree of assistance which is to be expected of health resort treatment. And, first, as to organic affections. In the presence of a real lesion of, say, the mitral orifice, which is adequately compensated, no treatment directed to the heart itself can possibly do any good and it may, by disturbing the balance which nature herself has established, very easily do a great deal of harm. If, therefore, interference is to have any character other than that of pernicious meddling it must be directed to lessening the amount of work which the heart is called upon to perform, while avoiding anything which may tend to produce relaxation of the crippled organ. We are generally told that this indication is best fulfilled by rest and a tonic *régime*, which is commonly interpreted to mean physical or recumbent rest and a generous dietary. Now, rest and a tonic *régime* undoubtedly constitute the primary and essential indications, but the rest should not be physical but physiological rest and the tone to be improved should be that of the whole organism and not that of one viscus only. The aim, in fact, should be to maintain the body in a high degree of what sportsmen call "training" or fitness, carefully avoiding anything approaching to over-training but eschewing more especially the far more dangerous opposite extreme of "softness." For the man with a compensated lesion at his mitral valve is, as it were, in a chronic state of running a mile race, and unless he is maintained in the height of such a degree of general physical fitness as his lesion allows he will certainly be overtaken by cardiac dilatation. If, on the one hand, he is given digitalis, Nauheim baths, and other measures directed exclusively to the heart itself, he is in danger of being over-trained; and if, on the other, he is allowed to resign himself to a sofa and bath-chair life, reinforced by a "supporting" alimentary *régime*, he is, as the saying goes, "beaten before he starts." It is scarcely an exaggeration to affirm that most cardiopaths are permitted to go wrong in one or other of these directions, and it is quite certain that the dangers of both may be very readily avoided by timely and regular recourse to a form of health resort treatment which, in place of being enthusiastic

[4] Heart Disease, with Special Reference to Prognosis and Treatment, by Sir William Broadbent and Dr. J. F. Broadbent, second edition, 1900.

[5] The Nauheim Treatment of Chronic Diseases of the Heart, by Leslie Thorne Thorne, M.D. Baillière, Tindall, and Cox, 1904.

and specific, is sane, physiological, and orderly. Such treatment would aim at maintaining the normal balance between intake and output by regulation of the diet; by providing for efficient, while avoiding excessive, exercise; and, above all, by promoting adequate excretion—by doing, in fact, those things which ought to be done and by leaving undone those things which should be omitted.

It is easy to object that these things can be managed at home, but the sad truth is that they seldom or never are. And this is no reflection either upon medical attendant or patient. A person with a well compensated lesion does not feel ill. He is not properly speaking an invalid; he seldom wishes to be so regarded and when he does it is not desirable that he should be. In either case he generally follows a course of his own choosing or one which is suggested by some irresponsible person or persons and unless he is every now and again compelled into the paths of physiological righteousness troubles are certain to arise. Incomparably the best, the easiest, and the least exacting way of so compelling him is to send him annually to a suitable health resort and to place him under the care of an experienced and skilful physician. A properly equipped health resort exercises an educational, a disciplinary effect upon those who visit it for treatment. Rules are there habitually observed which at home are habitually broken, the importance of detail is inculcated, and the value of regularity is appreciated. Special facilities, such as baths, massage, mechanical apparatus, waters, graduated hill paths, and the like, are provided for carrying out the items of the treatment, more especially that most important of all items, adequate excretion by skin, bowels, and kidneys. It is often surprising to find with what docility, even amounting to eager coöperation, a patient who is refractory at home will submit himself to discipline as soon as he finds himself at a health resort. Moreover, at a properly selected spa some, at any rate, of the practising physicians may be regarded as exceptionally experienced in the kind and degree of "training" to which a patient should be subjected and they may, therefore, be trusted not only to elicit the best immediate results but also to indicate the paths by which the dreaded days of broken compensation and intercurrent disease may be most successfully avoided. A cardiopath, though by no means necessarily a doomed man, has nevertheless a very narrow margin of hygienic error and there can be no doubt that if such patients were at regular intervals subjected to the educational influence of suitable health-resort treatment that margin would be overstepped far less often than it is. An annual reminder of the dangers ahead and practical experience in the best means of avoiding them are truly conservative measures which, if more frequently resorted to, would lessen materially the necessity for the exhibition of digitalis and the excuse for the routine employment of Nauheim baths. It is not suggested that these baths ought not to be used in such cases. They have, on the contrary, a very valuable place among the means calculated to maintain a sound physiological balance. When combined with other measures they help to promote metabolism, to increase pulmonary expansion, and to stimulate renal excretion; and it is partly because their routine employment is liable to obscure their value in these directions that such employment is to be deprecated.

Such an annual educational course, while eminently suitable to adults, is conspicuously adapted to children. The development of the cardiopathic child is liable to be defective in proportion to the gravity of the valvular lesion. If that development is allowed to continue on defective lines, such, for example, as inadequate thoracic expansion, the defect ultimately reacts injuriously upon the crippled heart and a vicious circle is established. It is essential to the future well-being of the patient that the establishment of this vicious circle should be forestalled and prevented; and this can be accomplished by timely and intelligent health-resort treatment far more effectually than by any other means. The personal element in the spa physician, his tact, knowledge, and experience, always a question of the first importance, is here absolutely paramount. For as there are some kinds and degrees of defective development which are vicious, so there are others which are wholly beneficial. Nature rightly guards herself against a general growth of tissue which it will be beyond the power of the heart adequately to feed but in this effort of thrift she is liable to include such organs as the lungs and kidneys which are among the most powerful of the heart's potential allies. To know what to develop and how to develop it, and what to refrain from developing, is the part of an experienced and skilful physician who has opportunities for close observation together with ready access to the necessary means of treatment, both of which conditions are more readily and more completely fulfilled at a health resort than elsewhere.

In the stage of broken compensation, even where this is only just commencing, very little is to be expected of health-resort treatment and this little can usually be more efficiently obtained at home. Cardiopaths in this stage bear journeys very badly and this consideration should alone suffice to protect them from being hurried to health resorts, especially oversea, even supposing it to be the case that some exceptional benefit is to be anticipated from the treatment on arrival. In reality, however, no such benefit is to be anticipated. The only cases which afford any justification whatever for the recommendation of a distant health resort in such circumstances are those of mitral regurgitation in the very earliest stages of threatened compensation and the majority even of those are much better managed at home. Nothing but harm can come of sending patients affected with aortic regurgitation away from their surroundings, and there is no spa whose magical effects provide a sufficient excuse for subjecting a case of mitral stenosis with broken compensation to the fatigues of a long journey and the inevitable disappointments at the journey's end.

In connexion with so-called functional cardiac disorders it is necessary to remember that they are not primarily cardiac. Whether with Babcock[6] we regard them as expressions of a disorder of the nervous system or with Huchard[7] we agree to attribute them mainly to the digestive system, or whether we decline with Clifford Allbutt[8] to attach the responsibility to any particular system, it is obvious that the initial fault is to be sought not in the central but in some peripheral organ or organs. The simplest explanation, and one which has the merit of including all the known facts, is that these functional disorders are due to abnormalities of vaso-constriction and vaso-dilatation induced by the presence of poisonous matters in the blood stream. Of these, by far the most important are those which give rise to vaso-constriction with its necessary sequence of increased blood pressure and decreased blood-supply to important viscera, including the heart itself. The latter, though thus deprived of its normal amount of nourishment, is nevertheless called upon to perform additional work in order to overcome the increased peripheral resistance, with the very natural consequence of tachycardia, bradycardia, arrhythmia, and pseudo-anginal attacks. If these disturbances of function are not relieved by the removal of their cause organic impairment in the form of arterio-sclerosis, myocardial degeneration, dilatation, and valvular insufficiency or stenosis are liable to follow.

It is necessary then that these disorders should be treated in their earliest stages, in the stage of arterial spasm which has not as yet led to organic change, the stage of "pre-sclerosis" of Huchard and his school. Unfortunately, there is no one symptom of this stage which is sufficiently characteristic to attract attention unless it be the presence of a high tension pulse, which, in the minds of some is so indissolubly connected with granular kidney that when other symptoms of this are absent no importance is attached to the altered state of the vessel. The complaint which brings the patient under observation is usually one of palpitation or præcordial distress combined not infrequently with attacks of giddiness. Dyspnœa is generally a pronounced symptom.[9] The surface is pale and the extremities, which are always cold, not infrequently "go dead." The urine is sometimes scanty and high coloured; sometimes it is the reverse; more often there is no regularity, the one state alternating with the other. The examination of the præcordial area which these symptoms naturally suggest reveals no increase of dulness and no murmur, but there is always an accentuated second sound to be heard at the aortic cartilage and not infrequently a prolonged first sound at the apex. The degree of the accentuation of the second sound will vary with the amount of spasm and the propelling power of the cardiac muscle. It is sometimes absent, and then it will be found that all the sounds are muffled without being impure. A history of mental lethargy may often be elicited,

[6] Diseases of the Heart and Arterial System, p. 703; Appletons, 1903.
[7] Consultations Médicales; Baillière, 1903.
[8] System of Medicine, vol. v., p. 807; Macmillan, 1898.
[9] Vide "Breathlessness," by Lauder Brunton, Practitioner, June 1905.

together with other symptoms suggestive of inadequate vascular supply to important organs.[10]

Now the proper treatment of cases of this nature should obviously be directed to bringing about vaso-dilatation. Drugs such as nitro-glycerine and nitrite of amyl, though highly useful in an emergency, produce effects which are much too transient to be of lasting benefit. What is required is a permanent reduction of blood pressure, and this can only be secured by ridding the system of the toxins which are causing the vaso-constriction. To accomplish this time is required, and that time must be spent in carefully adjusting the habits of life to the threatening conditions, by regulating the diet so as to avoid as far as possible the introduction of fresh toxins, by promoting metabolism, and encouraging excretion. And these things must be done systematically, according to a definite scheme which permits only of such variations as the changing reactive powers of the patient demand. And they must be done efficiently—that is to say, in circumstances where the patient has little or no temptation to neglect his instructions and in a locality where all the necessary means for the regulation of diet, the promotion of metabolism, and the encouragement of excretion are ready to hand. In a word, the patient should be sent to a health resort. It may, of course, be possible to treat him in his ordinary surroundings, but at the very best this is an extremely difficult matter, at any rate at first, whereas at a spa everything is made easy and the habits there inculcated, when once acquired, have a reasonable chance of being continued under the various conditions of trial and temptation which home life is liable to present.

In deciding upon the respective claims of the numerous spas at which cardio-vascular diseases may be treated on these lines it is necessary to take into consideration various factors, the majority of which it is beyond the scope of this paper to notice. There is, however, one general principle and a few practical details which may be mentioned in conclusion. The general principle is that any spa at which gout is properly treated is, potentially at any rate, a spa suitable to a cardiopath. The spa treatment of gout is directed mainly towards the promotion of metabolism and excretion and to the establishment of suitable habits, dietetic and hygienic, measures which, with slight differences in detail and degree, we have seen to dominate the rational treatment of cardiopathies, whether organic or functional. As qualifying this general principle, however, it is necessary to remember that physicians at "gouty" resorts are not, as a rule, in the habit of dealing with cardiac disorders, except in so far as these appear as complications or concomitants of the arthritic state, and that, furthermore, certain health resorts the waters of which are well adapted to the gouty have, so to speak, specialised in troubles of the cardio-vascular system, much in the same way and for the same obscure reason as Aachen has specialised in syphilis, Cauterets in throat affections, and Franzensbad in diseases peculiar to women. Of those which have specialised in circulatory disorders Nauheim, of course, occupies the first place. The general merits of this spa have, however, become so obscured by its reputation for miraculous results that it seems a species of *lèse-majesté* to include it among those resorts at which such everyday matters as metabolism and excretion may suitably be promoted. When it has successfully passed through the trying ordeal of the fairy tale period, which well-meaning but indiscreet enthusiasts have imposed upon it, it will take its place, and that probably a high one, as a resort at which cardiopaths may be treated rationally and with discrimination. That time is not yet, however, and until it arrives he who would avoid heroics for his cardio-vascular patients would be well advised to send them elsewhere.

Of the home stations which are suitably equipped for the treatment of cardiopaths on the lines above indicated it would be invidious to draw any distinction between such well-appointed spas as Buxton, Bath, Harrogate, Leamington, Strathpeffer, and Llandrindod, all of which are "gouty" places and at which, in consequence, metabolism and excretion are well understood, but none of which have so far shown any tendency to specialise in cardio-vascular disorders. The only British spa to exhibit any such tendency up to the present is Llangammarch Wells,[11] but judged from the continental standard of comfort and the provision of amusement and distraction this must be regarded as a health resort *in posse* rather than *in esse*. Considerable improvements have, it is true, been effected there during the last 12 months, but if it is ever to take the position to which its barium waters entitle it, a position which on many grounds we all desire to see it occupy, the present local policy of *laissez faire* must be replaced by one of vigorous energy and enterprise.

In France, two places, Bourbon-Lancy and Evian, have long specialised in cardio-vascular complaints and one, Royat is in process of so doing. A curious and hitherto unexplained, but clinically well-founded specialism, that of disorders of the venous system, is also found among the French spas at Bagnoles de l'Orme in Normandy. At Bourbon-Lancy they approach the treatment of organic cardiac complaints from the standpoint of the rheumatic and other diatheses which gave them birth. While special care is taken to "train" the heart and to develop the lungs, the underlying habit of body receives the utmost attention with a view not only of ameliorating existing conditions, but more especially of providing against any recurrence of acute attacks. For the waters of Bourbon-Lancy have a special value in the rheumatic diathesis. Wherein this value consists it is no more possible to say than it is to explain the undoubted efficacy of the waters of Contrexéville in renal affections. Inorganic chemistry has certainly no light to throw on the matter but here, as elsewhere, it is probable that radio-activity[12] and possibly some other forms of organic action may ultimately serve to explain the exact method of therapeutic effects the existence of which it is not possible to doubt. But, important as it is from the point of view of correcting the rheumatic tendency, the ingestion of the waters does not constitute the sole claim of this station to be regarded as one pre-eminently suited to the rational—that is, the prophylactic treatment of rheumatic cardiopaths. This claim rests in some degree upon its admirable natural advantages, climatic and æsthetic, but in a very large measure upon the very complete equipment, balneary and mechanical, with which the station is provided.[13] More important still, however, is the fact that the physicians have special knowledge and very special experience in applying the waters, the baths, and the mechanical means to the peculiar needs of cardiac patients in such a way as to adjust the work of the heart to the nature and degree of its impairment, thus securing to the patient increased capacity for work and indefinite postponement of consequential evils. It is well to remember that there are no miracles at Bourbon-Lancy and that it is useless in consequence to send thither a patient whose lesion is uncompensated, or such as have definite arterio sclerosis, atheroma, or mitral stenosis of long standing. The cases from which the best results are to be expected, and these are often brilliant, are compensated organic lesions of rheumatic origin in children and young people, in whom it is still possible to adjust the general physical condition to the impaired cardiac capacity. At this station, in fact, they make a specialty not so much of the disease as of the patient. The lines on which Évian has specialised are rather different. Here they concern themselves chiefly with functional cardiac complaints, the *cardiopathies artérielles* of the French school, and this they do by promoting excretion, more especially the renal excretion, for which their waters are so admirably adapted.[14] In addition, however, they encourage the action of that most important emunctory the skin, and in order to promote elimination by this route they have provided themselves with a magnificent *établissement* which is fully equipped with all the means for modern balneary therapeutics and contains in addition the mechanical appliances which constitute so important an element in the rational treatment of cardiopaths. Functional cardiac complaints, more especially in the stage of spasm or pre-sclerosis, induced by the

[10] Vide "High Arterial Pressure," by H. D. Rolleston, Clinical Journal, June 21st, 1905.

[11] Llangammarch Wells as a Health Resort, by W. Black Jones, M.D.; London, Kronheim, 1898. The Action of the Waters of Llangammarch Wells on Uric Acid, by W. Black Jones and Edward Russell, THE LANCET, March 25th, 1899, p. 830. The Action of Waters of Llangammarch Wells on Uric Acid, by W. Black Jones, THE LANCET, June 30th, 1900, p. 1883. The Mineral Water of Llangammarch Wells, by W. Black Jones, Brit. Med Jour., Oct. 24th, 1903.

[12] Quelques Considérations sur les Propriétés Radio-Actives des Eaux Minérales; Paris, Macon, 1905

[13] Traitement des Maladies du Cœur, &c., à Bourbon-Lancy, par Dr. Pistot; Paris, Macon, 1905. A French Rival to Nauheim, by J. McGregor Robertson, Brit. Med Jour., August, 1903. Traitement des Maladies Chronique du Cœur par la Balneation, par Dr. H. de Bosis.

[14] Les Cardiopathies Artérielles et la Cure d'Evian, par le Dr. Bergouignan; Paris, Steinheil, 1905.

presence of some poison in the blood and manifested by high arterial tension and such symptoms as breathlessness, palpitation, tachycardia, arrhythmia, and others already referred to, are treated here on thoroughly rational and scientific lines. With a view of checking the manufacture of the poison diet is regulated and with the object of insuring its disposal metabolism is increased and excretion, renal and cutaneous, is vigorously promoted. Moreover, the real inwardness of his complaint is carefully impressed upon the patient who is given to understand that if he does not wish his functional troubles to progress towards organic disease, such as granular kidney, angina pectoris, and diabetes, to say nothing of heart disease proper, he must be careful to observe the hygienic rules in which, down to the minutest detail, he is there instructed and the advantages of which he very soon learns to appreciate.

Although France is, in Châtel-Guyon, Salins Moutiers, Chateau-neuf, St. Nectaire, and Royat, provided with several well-appointed spas the waters of which contain a great deal of carbonic acid gas, it is only the last named, and that quite recently, which has shown any tendency to specialise in the treatment of cardiac complaints. The action of effervescing baths not only upon cardiopaths but also upon healthy people has been here studied in great detail [15] and the conclusions arrived at are entirely in consonance with those of Broadbent [16] and other unprejudiced writers on the subject. Royat being originally a gouty spa, and being possessed of waters exceptionally rich in CO_2, it is eminently fitted both by nature and experience for the rational treatment of circulatory disorders. The place [17] is rather more bracing either than Bourbon-Lancy (800 feet) or Évian (1250 feet), being situated in a valley which runs east and west, 1500 feet above sea-level. The relative humidity is low and the surroundings are exceptionally agreeable. The close proximity of the large town of Clermont-Ferrand (one and a half miles) affords a source of interest to visitors which is not common at health resorts. For cases which are amenable to treatment on Nauheim lines in which Nauheim itself, from its moderate elevation (400 feet), its comparatively unsatisfactory climatic conditions, or from other considerations [18] is deemed unsuitable, Royat is very well adapted, and it is especially suited to such patients as require mildly bracing conditions in charming surroundings.

York-street, W.

SURGERY AT SEA: A CASE OF PERFORATING DUODENAL ULCER; OPERATION; RECOVERY.

BY HUGH W. BAYLY, M.A. CANTAB., M.R.C.S. ENG., L.R.C.P. LOND.

ON April 27th, 1905, at noon, I was asked by Mr. Aubrey D. Knight, at that time the surgeon to the Royal Mail Steam Packet Company's ship *La Plata*, then three days out from Barbados on the homeward voyage, to meet him in consultation over a Government passenger (a soldier) who was suffering from severe abdominal pain. The history of the case was as follows. The patient, aged 24 years, had been suffering from "indigestion" for several years and said that he had many times been under treatment for "gastric ulcer" and had at one time been several weeks in hospital, when he had been placed on rectal feeding. He had several times had hæmatemesis, the last occasion being about three months previously. Since joining the ship his motions had been black. He was a bad sailor and had been seasick for 24 hours before I saw him. At 10.20 A.M. he had been seized with a sudden sharp pain situated about three inches to the right and at the level of the umbilicus.

I found the patient lying on his right side on a mattress on the floor of his cabin with his legs drawn up and in great pain and distress. On inspection the breathing was seen to be entirely thoracic and the abdominal walls were absolutely rigid. On percussion there was hyper-resonance over the right side of the abdomen but no loss of liver dulness. There was extreme tenderness on pressure over the whole of the right side of the abdomen but the left side was not so sensitive. The temperature was 96° F. and the pulse was 100, weak but regular, and not running. There had been no hæmatemesis.

I diagnosed perforating duodenal ulcer and advised immediate operation, but before proceeding to operation in the necessarily somewhat unfavourable circumstances I suggested to Mr. Knight the advisability of taking another opinion. He therefore asked Mr. G. W. Paterson, Government surgeon at Grenada, to see the case with us. Mr. Paterson considered that the case was either one of perforation of, or hæmorrhage from, a duodenal ulcer and as in his practice he had recently met with a case with very similar symptoms which turned out to be only hæmorrhage and recovered without operation he advised watching the case for four hours before proceeding to the somewhat desperate resource of abdominal section in a cabin on a rolling ship.

At 4 P.M., therefore, we saw the patient again and we then found that the pulse was 120 and that the temperature was normal, and that there was distinct distension of the right hypochondrium and right half of the epigastrium. We all agreed that surgical aid was now indicated and Mr. Knight requested Mr Paterson as the most experienced surgeon to undertake the operation. Mr. Paterson unfortunately was a bad sailor and subject to attacks of giddiness, so, though offering us the invaluable aid of his advice, experience, and assistance, asked me to operate. The ship's carpenter fixed up a board table two feet wide across the cabin, thus dividing it into two portions. Mr. Paterson, who kindly acted as my assistant, and Mr. Knight, who gave the anæsthetic, took the outside on the right of the patient, while I myself and the hospital assistant remained on the inner side of the table next to the door of the cabin. I made an incision in the middle line from the ensiform cartilage to an inch above the umbilicus and was somewhat hampered by the fact that there were only two scalpels available and that they had both been recently blunted by opening an abscess in the horny hand of a stoker. As soon as the peritoneal cavity was opened a considerable quantity of fluid escaped which, however, did not smell offensively. The ulcer was of about the size of a sixpence and was situated on the upper and anterior surface of the first part of the duodenum, almost encroaching on the pylorus. I first closed the ulcer with a purse string suture and then invaginated it with Lembert's sutures. I made a suprapubic pelvic drain and washed out the peritoneal cavity with normal saline solution and sponged it as well as I could, but the patient showed signs of collapse and I had to hurry over the peritoneal toilet and stitch the abdomen up quickly. I left a gauze drain at the site of the ulcer and another leading to the bottom of the pelvis. With the help of strychnine and ether hypodermically, a hot brandy and saline enema, and hot bottles the state of shock gradually passed off.

I should have liked to perform a gastro-jejunostomy but neither the condition of the patient nor the instruments at my disposal would allow of this and as there appeared to be plenty of room at the site of the ulcer I hoped the operation would not produce so serious a stenosis of the gut as to be of material importance. In 13 hours—viz., on the morning of the 28th—the temperature was 100° and I thought that it would be advisable to remove the gauze drains. As the patient, however, seemed very weak and as he had taken no nourishment for 24 hours before the operation owing to sea sickness, and as he had lost a considerable quantity of fluid *viâ* the peritoneum, I first transfused him with two pints of normal saline solution. I had no proper transfusion apparatus but with the help of a stomach-tube and an exploring needle, the point of which one of the engineers kindly filed off for me, an efficient substitute was soon made.

After the transfusion the pulse considerably improved and Mr. Knight gave an anæsthetic of equal parts of chloroform and ether and I removed the gauze drains. The upper wound was clean but a considerable amount of purulent material escaped from the suprapubic incision. I washed out the pelvis with normal saline solution and put in a rubber drainage-tube. On the morning of April 29th I washed out the pelvis again but there was practically no pus and the patient was now taking half-ounce doses of milk and water every half hour. In the afternoon the temperature rose to 101° and the pulse to 120, so as I suspected some accumulation of pus I examined the pelvis with the finger and washed it out again. I could not, however, find a pocket of pus but on the morning of the 30th when I dressed the patient

[15] Le Bain Carbo-gazeux, son Action, Physiologique et Thérapeutique, dans les Maladies du Cœur, par le Dr. Mougeot; Paris, Rousset, 1905.
[16] Loc. cit.
[17] Vide Journal of Balneology, October, 1904, p. 277.
[18] Consult McGregor Robertson's paper already mentioned.

about one ounce of pus escaped and the temperature fell to normal and the pulse to 90. The patient was now taking one ounce of milk and one of water alternately every quarter of an hour. In the afternoon we ran into a heavy gale and the ship rolled badly and the patient began to vomit considerable quantities of dark-green fluid. As he was subject to sea-sickness I could not be certain whether the vomiting was due to the sea or to peritonitis, so I gave him a quarter of a grain of morphine hypodermically every six hours and discontinued feeding by the mouth and substituted rectal feeding every four hours, together with an enema of a quarter of a pint of normal saline solution every six hours, given half an hour after the hypodermic of morphine.

On May 1st the vomiting continued but was less frequent, occurring about every four hours, but the temperature rose to 100° in the morning and 101° at night, when the pulse was 140 but regular and of fair strength considering his condition. The patient now was unable to retain the nutrient enemata and as he was still losing fluid by vomiting I again transfused him with two pints of normal saline solution. I also ordered a drachm of sulphate of magnesium in an ounce of water to be given every four hours till an action of the bowels had been produced; this occurred on the following morning and was very offensive. On the 2nd the sea moderated and I left off the morphine and rectal feeding and returned to feeding by the mouth, giving one ounce of milk and one ounce of soda-water every hour and the white of one egg made up to two ounces with water every four hours. The vomiting now was rather less frequent, occurring about once in five hours, but the amount vomited seemed to equal the quantity of nourishment taken.

On the morning of May 3rd the temperature was 99·5° and the pulse was 120. I removed the pelvic drain and washed out the pelvis every morning. In the afternoon we arrived at Plymouth and as the captain had kindly signalled at the Lizard for an ambulance to be in waiting at Plymouth I transferred the patient to the South Devon and East Cornwall Hospital. On the 18th, in reply to inquiries, I received a wire from the house surgeon: "Wounds still suppurating, general condition slightly improved;" and on July 10th: "Quite well, going out of hospital."

The Royal Mail Steam Packet Company carries a trained nurse on both its mail and intercolonial steamers and a trained male hospital assistant on its mail boats, and the *La Plata* was taking home as passengers two time-expired nurses from the intercolonial boats, and my best thanks are due to these ladies who devoted themselves entirely to the case and without whose willing and able assistance a successful result would probably not have been reached. My special thanks are also due to Mr. Paterson for his invaluable help. No doubt the fact that the patient had taken no food for the 24 hours previously to the perforation was a favourable factor.

I should like again to draw attention to the fact of the unreliability of loss of liver dulness as a symptom of perforation and to emphasise the importance of carrying a trained nurse on all large ocean-going passenger boats.

New Oxford and Cambridge Club.

ON THE BEHAVIOUR OF LEUCOCYTES IN MALIGNANT GROWTHS.

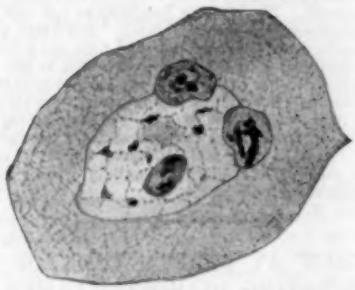
BY J. B. FARMER, F.R.S.,
J. E. S. MOORE, AND C. E. WALKER.

IN the present paper it is proposed to give an account of observations relating to the peculiar behaviour of leucocytes in very early examples of carcinoma in various parts of the human body. The phenomena described appear to be mainly, if not entirely, restricted to cancer in its earliest stages and not to occur in older growths, in metastases, or in grafts introduced into other individuals. Our observations at the present moment refer more especially to (1) a small primary rectal tumour, (2) an early case of chimney-sweep's cancer, and (3) an early epithelioma of the penis. In all of these the essential details in relation to the behaviour of the leucocytes are identical and suggest that we are here dealing with cytological phenomena peculiar to the earliest phases of the transmutation of normal tissue cells into cancerous elements.

It has frequently been noticed that round areas that are becoming cancerous there exists a marked activity among the leucocytes and the fact that cells in a cancerous area may contain leucocytic bodies within their cytoplasm has frequently been observed. The latter cases generally have been regarded either as phagocytic invasion of the leucocytes or as an indication that the cancer cells have assumed a phagocytic character with respect to the leucocytes. The results of the present investigations are not in accordance with either of these views. It was found in the rectal carcinoma above mentioned, for example, a growth that had hardly attained the size of a bean, that there was a very distinct zone of transition from the normal to the cancerous elements, round the periphery of the tumour; that is to say, a zone in which it was possible to pass, within the thickness of a few cells and almost insensibly, from elements that were merely actively dividing in the mucous layer, to cells that had assumed most markedly malignant characters. In this and other cases that we have examined we were irresistibly driven to the conclusion that the growth had not originated from a single cell or even from a few cells, but was being evolved by the direct conversion of a great many elements definitely functioning as mucous cells into those of a truly malignant type.

Immediately within this outer zone of the tumour the leucocytic crowding was most strikingly apparent and in a number of cells it was easy to discern the presence of leucocytes which had invaded the cytoplasm of the epithelial cells, where they stained readily as an inclusion. (Fig. 1.)

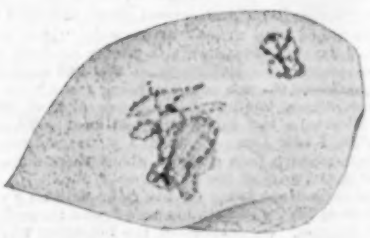
FIG. 1.



Tissue cell with two leucocytes lying in the cytoplasm adjacent to the nucleus.

This phenomenon did not occur in the adjacent healthy tissue, and we have ourselves been unable to trace it in inflammation produced by artificial means. But the most important, as well as the most singular, feature about the intrusion of the leucocytes into the tumour cells lies in the fact that neither the leucocyte nor the invaded tissue cell appears to be affected injuriously. Neither appears eventually to be destroyed, and it was soon found that many

FIG. 2.

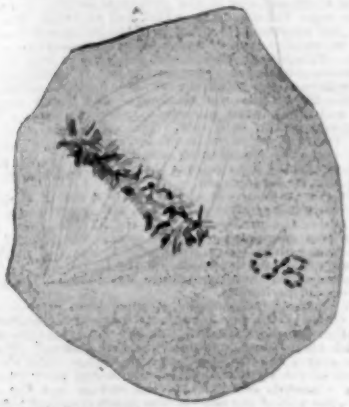


Tissue cell containing a leucocyte. Both nuclei are in prophase of division.

epithelial cells that were in phases of active division contained leucocytes that had been engulphed in their cytoplasm. In many instances it was found, moreover, that while the tissue cell was dividing mitotically the included leucocyte was also dividing in a similar manner and at the same time. (Figs. 2 and 3.) Both nuclei either passed

through their mitotic evolutions upon separate spindles, or the spindle figures became confused as is ordinarily the case in the first cleavage of the ovum.

FIG. 3.



Tissue cell containing a leucocyte. Both nuclei are dividing. The leucocyte is in a slightly earlier stage than tissue cell.

It is, we think, clear from the observations just recorded that a mixture of the chromosomes derived from the leucocyte and tissue cell respectively is distributed between the daughter nuclei resulting from the mitosis. In this way a complete disturbance of the normal chromosome constituents of the cell will be effected and the distribution must be of a qualitative as well as of a quantitative character. It may be well to indicate that if this process be compared to fertilisation there exists an important difference between true gametes and the cells concerned in this anomalous fusion. In the former (gametes) we are dealing with nuclei that have passed through the phases of maiosis (reduction), whereas there is no evidence at present to show that this is so in the case now under consideration. What its relation to the ultimate reduction that does occur in neoplastic cells may be is a subject for further investigation.

It may be pointed out that the fusion here described in no way corresponds with that union which has been stated to occur between the definite cancerous cells of certain neoplastic grafts.

In bringing this brief communication to a close we desire to express our indebtedness to the Imperial Cancer Research Fund for a grant in aid of our investigations.

CEREBRO-SPINAL MENINGITIS IN CEYLON.

BY ALDO CASTELLANI, M.D. FLORENCE,
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OUR knowledge concerning the presence in the tropics of the cerebro-spinal meningitis due to the diplococcus intracellularis of Weichselbaum is very scanty; it may be therefore desirable to put on record two cases I had opportunity to study bacteriologically some months ago in this island. Both cases were Singhalese subjects and occurred at an interval of a few weeks. Both were brought to the hospital in a state of coma and died a few hours later before any complete clinical examination could be made. The post-mortem examination was held shortly after death and the macroscopical lesions found were practically identical in the two cases.

The meninges were thickened and opaque; the blood-vessels were greatly engorged. The entire cortex in both cases was covered with a thick purulent exudate; there was much pus along the larger fissures and sulci. On section the ventricles were found to be dilated; the cerebro-spinal fluid was turbid. A few cubic centimetres of this were collected and centrifuged. The microscopical examination of the sediment showed a very few mononuclear leucocytes, numerous polymorphonuclears, some of which were undergoing fatty degeneration, and a few macrophages. Some rare erythrocytes were present. Stained preparations showed numerous cocci. Most of these cocci were contained in the leucocytes and were arranged in couples; some were decidedly kidney-shaped, presenting an almost gonococcus-like appearance. A few were free and in rare instances were arranged in short chains. In preparations stained by Gram's method most of the cocci were not stained; here and there, however, it was possible to see a few which were not completely decolourised.

I tried to obtain cultures from the purulent exudation, the cerebro-spinal fluid, the pulp of the spleen, and the blood of the heart, using the ordinary laboratory media and also serum agar and blood agar. The media inoculated with the blood and the spleen juice remained sterile. Of the media inoculated with the purulent exudate and the cerebro-spinal liquid the agar, gelatin, broth, and peptone water did not show any growth; while the serum-agar and blood-agar tubes presented, after having been kept 24 hours at blood temperature, some small roundish translucid colonies showing some tendency to coalesce. Preparations from the colonies presented cocci in pairs and very short chains; the cocci were decolourised by Gram's method almost completely. Subcultures were made and frequently repeated. After several generations the organism became capable of growing well on ordinary media like agar-agar, gelatin, broth, &c. Moreover, the property being decolourised by Gram's method became less and less marked in solid media cultures, while it was retained by liquid media cultures. These characters of the meningococcus have been observed by many authors and lately well studied and minutely described by Lepierre.[1]

The organism in the first cultures obtained directly from the exudate and the cerebro-spinal fluid was very slightly virulent. Rabbits and guinea-pigs inoculated subcutaneously and intra-peritoneally all survived. Three rabbits were inoculated intravenously with an emulsion of two loopfuls each of blood agar culture in broth. They survived and practically did not show any signs of malaise. More successful was the inoculation of a similar emulsion under the dura mater. Of two rabbits so inoculated one died in two days; the other was ill for several days, refusing food and remaining in a state of sopor, but ultimately recovered. The necropsy of the rabbit which died showed a very marked injection of the meninges but no pus. Smears from the brain substance stained with diluted fuchsine contained many cocci, generally in pairs. From the brain substance, taken with all the aseptic precautions, pure cultures were easily obtained. The blood of the heart and the spleen pulp did not show any organisms when examined microscopically and all the media inoculated remained sterile.

By repeated passages through rabbits, using the subdural method, the organism became very virulent, being capable of killing rabbits by subcutaneous injections, this causing a general septicæmia so that the organism was easily grown from all the organs. Two rabbits were also inoculated under the dura mater with three drops each of the purulent exudation taken directly from the bodies. One showed signs of great malaise but survived; the other died in four days. The organism was present in the brain but not in the blood and spleen. The meninges were inflamed but no purulent exudation was present.

From all the characters of the organism found in these two cases of meningitis it was clear that I had really to do with the diplococcus intracellularis of Weichselbaum. This organism, discovered by Weichselbaum in 1887, was first considered by many observers as a simple variety of the streptococcus lanceolatus. Further investigation, however, clearly showed that it was quite a different species. Of the meningococcus several types have been described lately. Generally two types are admitted—the Weichselbaum type and the Jaeger-Heubner type. These two types are considered different species altogether by Weichselbaum himself, Albrecht Ghon, and others, while other authors (Concetti, Lepierre, and others) believe that the one type may pass into the other. The organism present in my cases was certainly a meningococcus of the true Weichselbaum type, as shown by the typical diplo hemispheric shape, the very slight virulence, the absence of growth (at first) in the usual media, and the discolouration by Gram's method, while the

[1] Charles Lepierre: Le Meningococcoque, Journal de Physiologie et de Pathologie Générale, March 15th, 1903.

meningococcus of the Jaeger or Jaeger-Heubner type grows abundantly on the ordinary media, is frequently not decolourised by Gram's method, and is generally very virulent.

Colombo, Ceylon.

AN ANALYSIS OF 300 CONSECUTIVE GYNÆCOLOGICAL LAPAROTOMIES.

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PART II. (*concluded*).[1]

THE notes of the first 150 cases of these 300 consecutive gynæcological laparotomies were published in THE LANCET last week. As I did previously, I would take the liberty of reminding readers that the notes should be read in connexion with the table published in THE LANCET of July 8th, 1905, p. 70.

CASE 151.—A double hydrosalpinx. The right tube was as thick as the wrist, the left tube being less enlarged. Adhesions were present in the pelvis.

CASE 152.—A fibroid reaching up to the umbilicus. There were many old thin adhesions on the peritoneal surface of the uterus. There was a very perfect large tubo-ovarian cyst on the right side, the outer (i.e., ovarian) part being of the size of a fœtal head at term. It lay in Douglas's pouch and was very adherent to the back of the uterus and rectum; it was removed without rupturing. The left ovary, which was three times the normal size, was fixed in the pelvis and to the back of the uterus by extensive adhesions.

CASE 153.—Operation for generally contracted pelvis. This was the second pregnancy. The patient had been 24 hours in labour. The os was fully dilated; two attempts had been made outside the hospital to deliver with axis-traction forceps. The vulva was œdematous. The fœtal heart was distinct and was still beating when the child was extracted but the child could not be made to breathe. The true conjugate was about three and a quarter inches. The patient was said to have had one child before, a very small one delivered with great difficulty by forceps in Russia.

CASE 154.—A large tumour of the size of a uterus at eight months. The right ovary was removed with the tumour. A very large incision was made. There was a fibroid of the size of an orange growing from the posterior wall of the supravaginal cervix beneath the peritoneum; this had to be enucleated. The tumour weighed 9 pounds 10 ounces.

CASE 155.—A right pyosalpinx of the size of a duck's egg, which was adherent in the pelvis, to the rectum, and the back of the uterus. Pus escaped during removal. The left tube was enlarged and thickened and was adherent to the ovary; this did not contain pus. The peritoneum was washed out with saline solution.

CASE 156.—The external os was patulous, admitting the finger one inch or more. The canal was lined with malignant growth. The uterus was much less moveable than normal. The temperature was 104° F. on the first day the patient was examined. On opening the abdomen the pelvic organs were hidden by a roof of adherent intestine. On separating, the right ovary, which was of the size of a Tangerine orange, was gradually defined. The left ovary, which was of the size of a large walnut, was similarly separated from a bed of adhesions and complete removal of the uterus was performed. There were dermoid cysts of both ovaries. A gland of the size of an almond in shell was removed from the surface of the external iliac artery; it was not cancerous. The abdominal wound broke down, but ultimately healed soundly.

CASE 157.—A left ovarian cyst of the size of an orange adherent in the pelvis. There was a right ovarian cyst of smaller size. Adhesions which were binding down the uterus in retroverted position were separated. A subperitoneal fibroid of the size of a plum at the fundus was not removed.

CASE 158.—A solid ovarian tumour had been diagnosed. On opening the abdomen the uterus and ovaries were seen to be quite normal. The sigmoid flexure lay directly under the wound and had a diameter of six inches. I called in a surgical colleague to see the case with me. At first it was thought that the tumour lay behind the sigmoid flexure and he made an attempt to enucleate it from behind. He soon concluded that the tumour was in the bowel and removed it by opening the bowel. It was a hard fæcal concretion of the size of a large cocoanut which had dilated the sigmoid flexure to the size mentioned. The patient had been in hospital a week and her bowels had acted well.

CASE 159.—A left ovarian cyst reaching to one inch above the umbilicus; it contained thick black fluid and required extensive enucleation. The peritoneum was sutured over the region of enucleation. There was a right ovarian cyst of the size of a cocoanut which contained turbid yellowish fluid, not pus.

CASE 160. The tumour reached a hand's breadth above the umbilicus. There were multiple fibroids, some of which were calcified. The left ovary was removed with the uterus. The abdominal wall was very fat. The tumour weighed 4 pounds 10 ounces.

CASE 161.—The tumour reached nearly to the umbilicus to the right of the middle line. The right Fallopian tube was found to be dilated to the size of a large orange and was adherent to parts around. The fimbriated end of the tube was widely dilated. A macerated fœtus two and a half inches long came up among the clots removed. A mass of old clot of the size of the fist was adherent to the intestine and omentum and formed the greater part of the abdominal tumour noticed before operation. The right tube and ovary were removed. The left tube and ovary were normal and were not removed.

CASE 162.—The tumour reached nearly to the umbilicus. There was a double hydrosalpinx which was largest on the right side. There were numerous adhesions between the dilated tubes, the uterus, the rectum, and the pelvis.

CASE 163.—The uterus was of the size of a child's head (one year) and was enlarged by multiple fibroids undergoing mucoid degeneration. The right ovary and tube were removed with the tumour.

CASE 164.—An emergency operation in the night. There was a large quantity of blood and clot in the peritoneal cavity. The pregnancy was in the right Fallopian tube which had ruptured. The tube was removed. On examination afterwards the ovum was found in the tube with an amniotic cavity and a fœtus three-quarters of an inch long. *Note.*—This patient was operated on by me on Sept. 6th, 1901, for ruptured extra-uterine pregnancy in the left Fallopian tube. Intravenous injections of salt solution were made during operation then.

CASE 165.—The uterus was retroverted and bound down by old adhesions and there were numerous adhesions binding down the uterine appendages on each side. The appendages were otherwise healthy. The fimbriated ends of both tubes were open. After separating the adhesions nothing was removed but the uterus was stitched by one fishing-gut suture to the abdominal wall. The operation was undertaken for chronic pain.

CASE 166.—The tumour was of the size of a uterus at six months. One large fibroid had grown out into the left broad ligament, opening it out and raising the peritoneum from the left iliac fossa. Extensive enucleation was necessary. The left ovary was removed with the tumour. As the right ovary was cystic it was also removed. The patient died, probably from sepsis, on the fourth day. At the post-mortem examination nothing definite was found. There was very slight evidence of peritonitis.

CASE 167.—Chronic inflammation of appendages of very long standing. The whole of the pelvic contents were firmly matted together and separation was very difficult. The left Fallopian tube which contained thick turbid fluid, not pus, was first removed. There was a left ovarian cyst of the size of a Tangerine orange which was removed. The removal of the right Fallopian tube caused most difficulty as it was firmly adherent, especially to the rectum and the vermiform appendix. The wall of the rectum was much damaged but its lumen was not opened. The right tube contained fœtid pus which escaped during removal. A fæcal fistula occurred a week after operation.

CASE 168.—The tumour reached to the umbilicus and was softer than most fibroids. It was found to be fibroid undergoing mucoid degeneration. The right ovary was not removed. The tumour weighed three pounds.

CASE 169.—The tumour reached to the umbilicus. The fundus and the body of the uterus were not involved. The fibroid was a single one growing in the supravaginal cervix posteriorly. It had to be enucleated from the retroperitoneal "bed," from which there was much oozing. Both ovaries were removed with the uterus. A gauze drain was inserted on account of the oozing. The fibroid was extensively degenerated, section showing a substance like apple jelly in many places.

CASE 170.—A hard irregular tumour reaching to the ribs on the right side. There was much free fluid on opening the abdomen. There were adhesions to the omentum, the sigmoid flexure, and the anterior abdominal wall. The walls of the tumour were very friable and broke in one or two places during removal, and papillomatous growth from the inside of the tumour escaped. No secondary deposits were seen anywhere. The pedicle was broad but otherwise was healthy. The left ovary was healthy. The peritoneum was washed out with salt solution. A swelling of the left shoulder-joint ten days after operation gradually disappeared. About a month after operation convergent strabismus occurred. Mr. A. B. Roxburgh thought the eye changes were due to embolism of the central artery of the retina. The eyesight gradually improved before the patient left the hospital.

CASE 171.—A left ovarian cyst of the size of a uterus at seven months. It had grown between the layers of the broad ligament and upwards behind the peritoneum. Extensive enucleation was necessary. Three or four inches of the left ureter were recognised closely applied to the deepest part of the cyst and required very careful separation. Many bleeding points in the retroperitoneal "bed" required tying. The gap in the peritoneum was closed with fine silk. The tumour contained clear sticky fluid measuring 214 ounces.

CASE 172. The left Fallopian tube was enormously dilated to about the size of a child's head (one year). There were many adhesions to the intestine and the back of the uterus. One bleeding point on the back of the uterus required an encircling suture. A tubal mole was found in the tube.

CASE 173.—A right ovarian cyst of the size of a uterus at seven months with twisted pedicle. It was adherent to the abdominal wall, the intestine, and the omentum. It contained dark fluid; 108 ounces. The left ovary was healthy.

CASE 174.—The uterus was uniformly enlarged to the size of that of two to three months which was thought to be due to fibroids. It was merely general hypertrophy, no fibroid being found. The patient suffered from uncontrollable menorrhagia.

CASE 175.—A left multilocular ovarian cyst of the size of a uterus at seven months. There were adhesions to the back of the uterus. The pedicle was broad and was tied in sections. The right ovary, which was cystic and of the size of a duck's egg, was also removed.

CASE 176.—The patient had been married seven and a half years. The uterus was retroflexed and bound down by adhesions. There was dyspareunia. At the operation the tubes were found to be healthy; adhesions binding down the uterus and ovaries were separated and the uterus was fixed to the abdominal wall by one silkworm-gut suture passed through the anterior wall.

CASE 177.—Chronic inflammation of the uterine appendages. There were many pelvic adhesions and some to the back of the uterus, and those and several bleeding points required encircling sutures. The tubes were much thickened and closed externally.

CASE 178.—A double tubo-ovarian cyst, forming a tumour large enough to reach to the umbilicus. The left tube was the larger and opened into the cavity of the cyst formed by the ovary. The left tube contained pus and burst during removal. A small fibroid of the size of a walnut was removed from the right side of the fundus uteri. There were many pelvic adhesions. The peritoneum was washed out with salt solution. *N.B.*—The tumour was thought to be uterine fibroids before operation.

CASE 179.—A fibroid tumour of the left ovary of the size of a goose's egg which was adherent to the sigmoid flexure. The Fallopian tube

[1] Part I. and the first portion of Part II. were published in THE LANCET of July 8th (p. 69) and 29th (p. 284), 1905, respectively.

were normal. Part of the abdominal wound broke down but ultimately healed soundly.

CASE 180.—The tumour reached nearly to the umbilicus. There was an interstitial fibroid of the fundus and posterior uterine wall. The left ovary was removed with the tumour, but the right ovary was not removed. Menorrhagia had been the chief symptom.

CASE 181. A left ovarian cyst which reached up to the umbilicus. It contained thin black fluid. The cyst burrowed between the layers of the broad ligament and had to be carefully enucleated. While doing this a portion of the left ureter came into view. There were adhesions to the intestine also. The right ovary was normal.

CASE 182.—A left ovarian cyst of the size of an orange which was very adherent in the pelvis and to the rectum. It contained dark fluid.

CASE 183.—A right pyosalpinx. On opening the abdomen the pelvic organs were seen to be roofed in by coils of intestine which were firmly adherent. On separating these it was found that the right Fallopian tube was greatly dilated and adherent everywhere; it contained fœtid pus and burst during removal. The uterus was firmly adherent to the rectum. During removal a hole was torn in the rectum. The patient died from shock in 24 hours.

CASE 184.—A multilocular left ovarian cyst containing bloody fluid and of the size of a child's head (one year), with twisted pedicle. There were adhesions to the intestine. The patient was four and a half months pregnant at the time of operation and did not abort after it. She was taken ill suddenly a few days before admission with symptoms of twisted pedicle.

CASE 185.—The left Fallopian tube was of the size of an orange and contained a tubal mole. The tube and ovary were removed. There were many adhesions to the intestine and in the pelvis. A small rupture had occurred at one part of the tube. There was a good deal of old blood clot in the pelvis.

CASE 186.—A double pyosalpinx. On the right side the tube had formed a tumour curiously twisted like a large whelk shell; it contained pus which could not be pressed out of the minute open end of the tube as this was closed in a valve-like manner by the tension of the fluid inside. The right ovary was removed with the tumour. The left tube was similar but smaller and was also removed. The left ovary was not removed. No tubercle bacilli were found in the pus.

CASE 187.—Both tubes were dilated and adherent to the ovaries and parts around.

CASE 188.—The tumour reached to the umbilicus and was thought to be a fibroid. On opening the abdomen free fluid was found. A soft, friable mass (like malignant ovarian) was seen growing from the anterior surface of the uterus. Hysterectomy was performed with difficulty as the broad ligaments were found to be thick and inelastic and apparently infiltrated by malignant growth. The patient died from peritonitis on the third day.

CASE 189.—Pregnancy in the right Fallopian tube. This showed no sign of rupture; it contained a fœtus two and a half inches long. The right ovary was not removed. This case must be regarded as "missed" tubal abortion.

CASE 190.—A tumour reaching rather above the umbilicus. There were multiple fibroids. The right ovary was removed with the tumour.

CASE 191.—Chronic inflammation of the uterine appendages. The right tube, which was adherent to the intestine, was removed with its ovary. The left tube was dilated; this was also removed. The left ovary was not removed. The tubes contained dark turbid fluid, not pus.

CASE 192.—A large multilocular ovarian cyst on the left side had burst and free fluid was found in the peritoneum. The pedicle was twisted. There was a similar smaller cyst of the right ovary. A lump was felt at the portal fissure of the liver of the size of a duck's egg; (?) malignant. No other secondary deposits were seen. The peritoneum was washed out with salt solution.

CASE 193.—A right ovarian cyst. There was a pyosalpinx on the left side which was firmly adherent to the uterus and rectum. The uterine tissue was friable and the uterus had to be removed. The patient died on the third day. The pyosalpinx burst during its removal.

CASE 194.—A hard, irregular tumour reaching to the umbilicus. Both tubes were dilated and therefore the uterine appendages were removed with the uterus. A part of one fibroid grew low down in the uterus and had to be enucleated.

CASE 195.—Both tubes were dilated and adherent to the ovaries and in the pelvis, especially on the left side of the rectum.

CASE 196.—A left ovarian cyst containing 16 pints of dark fluid. The right ovarian cyst was of the size of a duck's egg. There were no adhesions.

CASE 197.—A subperitoneal fibroid of the uterus of the size of a large orange with a narrow twisted pedicle. The tumour presented a blackish purple colour. Both ovaries were normal. On section of the tumour the surface generally was reddish black with circular yellow islets scattered over it.

CASE 198. The patient had been 36 hours in labour and the membranes had been ruptured 12 hours. A portion of the Fallopian tube was excised on each side. The child weighed 7 pounds 4 ounces. The mother and child did well. The patient's height was 4 feet 8 inches.

CASE 199. An emergency operation. The abdomen was full of clot and fresh blood. The left Fallopian tube had ruptured and contained a tubal mole with an amniotic cavity of the size of a large walnut. The left tube and ovary were removed. The peritoneum was washed out with salt solution.

CASE 200.—A right multilocular ovarian cyst of the size of a uterus at term. There were no adhesions. The left ovary was healthy. The cyst contained 116 ounces of fluid.

CASE 201.—A large multilocular ovarian cyst reaching to three inches above the umbilicus. It contained thick glairy fluid. No adhesions were present.

CASE 202. A dermoid cyst of the left ovary of the size of a child's head (one year). This was removed without tapping. The right Fallopian tube, which was of the size of a forefinger, was closed at its fimbriated end and was adherent to the rectum; this was also removed. The right ovary was not removed.

CASE 203.—An ovarian cyst on the left side of the size of an orange; it was densely adherent to the pelvis and to the rectum. The left Fallopian tube was dilated and it contained pus. The right tube was also dilated and closed; it was removed with part of the right ovary.

CASE 204. Fibroids forming a tumour which reached up to the umbilicus. The left ovarian cyst was of the size of an egg. The right ovary was normal except for a few adhesions to it which were broken down.

CASE 205.—A dilated left tube with an ovary somewhat cystic. It was very adherent in the pelvis. The right tube was similarly affected. Both tubes contained bloody fluid.

CASE 206.—A left ovarian cyst of the size of a duck's egg and a right ovarian cyst of the size of a hen's egg. Both contained dark tarry fluid and were more or less adherent in the pelvis. The uterus was moderately enlarged by multiple small fibroids, some of which were so placed as to interfere with the mobility of the uterus. The rectum was adherent to the back of the uterus.

CASE 207.—The patient was thought to be suffering from inflammation of the right uterine appendages. On opening the abdomen the ovaries and tubes were found to be healthy; the lump to the right was formed by a mass of omentum and intestine which was adherent to the appendix. My colleague, Mr. H. M. Rigby, took over the operation and removed the appendix.

CASE 208.—The patient was very ill on admission. It was thought that the tumour might be a large ovarian tumour with a twisted pedicle. Exploratory laparotomy was performed. The tumour was adherent to the abdominal wall half-way to the umbilicus. The general peritoneal cavity was opened higher up. A solid red mass came into view; it had a smooth surface and occupied practically the whole of the abdomen. It presented a horizontal fissure and secondary fissures dividing it into lobes. It was like the spleen or the liver, but these organs were not involved. About four inches of the descending colon was the only part of the intestine which was seen. The tumour passed into the pelvis and was firmly fixed there. None of the pelvic organs could be reached. Mr. J. Hutchinson, jun., saw the case with me and considered it to be a retroperitoneal sarcoma. We both agreed that it was quite irremoveable. Nothing was attempted in the way of removal.

CASE 209.—One silkworm gut suture was put through the anterior surface of the uterus near the fundus, through the parietal peritoneum and the rectus on each side. The operation was for prolapse.

CASE 210. The left Fallopian tube contained pus and was adherent to a left ovarian cyst of the size of a Tangerine orange also containing pus. The right Fallopian tube was not closed or abnormal except for some filmy adhesions which were separated.

CASE 211.—A flattened fœtus three inches long was found in an adventitious cavity in the left side of the pelvis with clot. The whole mass was of the size of a fœtal head at term. The left ovary was not removed. The inner part of the left tube was normal. The mass was certainly not in any part of the tube at the time of the operation. The right ovary and tube were normal.

CASE 212.—A fibroid growing out from each side of the uterus, causing a dumbbell-shaped tumour. The right ovary was not removed. The tumour had caused retention of urine several times.

CASE 213.—A right hydrosalpinx larger than a large orange; this was sufficiently separated from the right ovary to allow of the latter being left. On the left side the dilated tube and ovary were both removed. There were a few film-like adhesions about the dilated tubes.

CASE 214. The tumour was a large solitary interstitial fibroid of the anterior uterine wall. The mass was removed and weighed five and a half pounds. On section the tumour showed a surface like raw beef. The left ovary was not removed. The uterine cavity was between seven and eight inches long.

CASE 215. A left multilocular ovarian cyst reaching to the epigastric region. Tapping had to be performed three times before the cyst could be extracted. There was a right ovarian cyst of the size of a cocoanut; this had extensive adhesions in the pelvis which caused much trouble. Papillary growths were afterwards seen in the interior of both tumours.

CASE 216.—Pregnancy in the left tube which had just ruptured, causing a small amount of currant-jelly clot in the pelvis on the left side. The left tube and ovary were removed. The ovum, a tubal mole, occupied the middle third of the tube, the fimbriated end of which was open and somewhat dilated. There was a rent in the posterior part of the tube. The right ovary and tube were healthy. Parotitis (right) came on within 24 hours but disappeared in a few days. I saw this patient on July 11th of the same year (1904) and she was then three and a half months pregnant normally.

CASE 217.—A large multilocular ovarian cyst of the size of a uterus at term; it was very friable. The other cyst was smaller and similar in kind. Free fluid was present in the peritoneum. There was a small patch at the bottom of Douglas's pouch suggestive of secondary deposit. The peritoneum was washed out with salt solution.

CASE 218.—The patient had been in hospital waiting for Cæsarean section, the intention being to operate as soon as labour began. On Jan. 27th, 1904, I was told labour had begun and I at once operated. At the operation I found that the liquor amnii had all escaped and after extracting the body of the child through the ordinary uterine incision I could not get the head out as there was a well-marked uterine contraction ring holding it round the neck. This ring had to be incised to get the child out. This, as might be expected, caused great hæmorrhage and in a place where it was difficult to stop it. This was done at last, but the patient died the same night. I found out afterwards that the waters had been noticed to have been coming away for four days. There was a generally contracted pelvis

CASE 219.—A right ovarian cyst with a twisted pedicle reached up to the umbilicus. Some recent adhesions were easily separated.

CASE 220.—A large swelling reaching up to the umbilicus. A moveable knob of the size of an egg on the front of the tumour was subsequently found to be the middle third of the right Fallopian tube. This was adherent to the intestine, omentum, and sigmoid flexure. The tube was bent down into the pelvis where its open, dilated, fimbriated extremity was fused with a mass of adhesions forming an adventitious cavity which was full of clot. The right tube was removed.

CASE 221. A right ovarian cyst of the size of a goose's egg. There were no adhesions. A part of the ovarian tissue beyond the cyst contained a well-marked corpus luteum.

CASE 222.—Fibroids reaching up to the umbilicus. The left ovary was adherent to the back of the uterus. It was separated from the adhesions but not removed. The right ovary was removed with the uterus. The fibroids had involved chiefly the upper part of the uterus. A small portion of the mucous membrane of the body of the uterus was probably left in the stump as the patient subsequently had a slight loss monthly. The patient was very anæmic before operation owing to menorrhagia.

CASE 223.—A fibroid growing from the left side of the uterus into the left broad ligament of the size of a fœtal head at seven months. This

could not be brought up till the peritoneum had been incised and the tumour enucleated. The body of the uterus was not much altered. The left ovary and tube were removed with the tumour. The right ovary was not removed.

CASE 224.—A fibroid tumour of the uterus enlarging it to the size of a seven months gestation. After removing this carcinoma of the body extending into the cervical canal was found. The remainder of the cervix was removed from above. Both ovaries were slightly cystic.

CASE 225.—A dermoid cyst of the left ovary of the size of a cocoanut. This was removed without tapping; it was fairly adherent to the rectum. Some small fibroids in the uterus were not interfered with.

CASE 226.—A cystic subperitoneal fibroid of the size of a uterus at seven months; it was taken for an ovarian cyst before the operation. Omental adhesions were present. The right ovary was not removed. The fluid in the cyst was brownish.

CASE 227.—The symptoms dated from a confinement two months before the operation. The patient was a month in hospital before operation; she was feverish all the time. At the operation a right pyosalpinx was found; it was very adherent and burst during its removal. A left pyosalpinx was also present. Both tubes and ovaries were removed. The operation was very difficult. Convalescence was long. The patient went out on May 5th.

CASE 228.—The uterus was sutured to the abdominal wall by Kelly's method. A colporrhaphy (double) was performed three weeks later.

CASE 229.—A right unilocular ovarian cyst of the size of a hen's egg. The appendages were matted together; the tubes were thickened and adherent. A small subperitoneal fibroid at the fundus was not removed.

CASE 230.—A left dermoid cyst reaching to the umbilicus. There were adhesions to the omentum, the intestine, and in the pelvis. The right ovary and tube were healthy.

CASE 231.—A right ovarian cyst of the size of a uterus at six months. The wall was friable and broke in several places and papilliomatous material from the interior escaped. The sigmoid flexure was adherent to the uterus and a hard ring-like thickening was felt in the sigmoid flexure, above which the descending colon was much dilated and evidently contained fæces. The opposite ovary was normal. After recovering from the ovariotomy the patient was transferred to the surgeon.

CASE 232.—A dermoid cyst of the right ovary of the size of a uterus at six months. There were adhesions to the intestine, omentum, and bladder. The left ovary and tube were also removed owing to some calcareous deposits being found in the ovary.

CASE 233.—A right multilocular ovarian cyst reaching to within one inch of the xiphoid cartilage. It contained 14 pints 12 ounces of fluid. The left ovary and tube were healthy. A fortnight after the operation a swelling was felt in the abdomen rising to the umbilicus and there was some bulging in Douglas's pouch. At this time for a week or so the temperature rose to 102° F. at night. All swelling disappeared in a week's time and the temperature became normal.

CASE 234.—The right Fallopian tube was much dilated and adherent to the ovary, also to the surrounding parts. On being opened it contained a tubal mole. The left ovary and tube were not removed. The case had been recognised as one of ectopic pregnancy and had been kept in hospital a month before operation, which was undertaken because pain persisted.

CASE 235.—A left tubal pregnancy; the fimbriated end was widely dilated and there was a large hæmatocele in the peritoneum. Attempted tubal abortion; there was no rupture of the tube. The tube was removed. This was a second ectopic pregnancy in the same patient, as she had been operated on two years before by Mr. Dean for tubal pregnancy on the right side. I was present at the operation. In opening the abdomen a second time the omentum and the small intestine were found adherent under the old scar.

CASE 236.—The uterus was enlarged by carcinoma of the body. Vaginal hysterectomy was attempted but after a considerable time it was abandoned as it appeared impossible to get the uterus out from below. Abdominal panhysterectomy was performed. A good deal of time was lost between the two operations. The patient had lost a good deal of blood and died from shock in 24 hours, in spite of intravenous injection of salt solution. I think that if I had begun with the abdominal operation the result would have been different.

CASE 237.—I had operated on this patient six months before for tubal pregnancy. On this occasion the pregnancy was in the left tube and there was a large amount of blood and clot in the peritoneal cavity. The ostium of the tube was widely dilated. The tube was removed. (This is the same case as No. 161 in this series.)

CASE 238.—A Cæsarean section (conservative); the child, a boy, was living. An attempt to sterilise the patient was made by excising loops of both tubes. The operation was performed about a week before full term. She had had three previous labours, two at term with forceps, the child on each occasion being stillborn, and one was induced at eight months, this child being also stillborn. She had a generally contracted pelvis; the conjugate was about three and a half to three and three-quarter inches.

CASE 239.—A left suppurating ovarian cyst of the size of an orange. There were numerous adhesions. Offensive pus escaped during removal.

CASE 240.—The operation was performed on account of menorrhagia. The sound passed for four and a quarter inches. There was a fibroid in the anterior wall of the uterus. The left ovary, which was slightly cystic, was removed with the uterus; the right ovary was not removed.

CASE 241.—Multiple fibroids. The tumour was of the size of a uterus at from three to four months. The right ovary was not removed; the left ovary, which was enlarged, was removed with the uterus.

CASE 242.—The left Fallopian tube was dilated and it contained a tubal mole. The tube was adherent to the rectum and the bladder, which stretched back over the dilated tube and had to be separated before the tube could be removed. The tube was dilated to the size of a goose's egg. The right appendages were normal.

CASE 243.—A right ovarian cyst of the size of an orange was adherent to the back of the uterus and in the pelvis. It contained bloody fluid. The left ovary and tube were matted by adhesions but these were separated and the left appendages were not removed. The ostium of the left tube was open, or it was opened by separating the adhesions.

CASE 244.—A right suppurating ovarian cyst of the size of a child's head (one year). It was supposed to be a fibroid before operation. The patient had been feverish for some time before operation. The tumour was firmly adherent to the sigmoid flexure, the pelvis and the back of the uterus, and also to the omentum. The peritoneum was stripped off the right iliac vessels in separating the tumour, so that the right ureter was exposed. The tumour was removed without bursting. It contained horribly offensive pus with flocculent green lumps. The left ovary was normal. There was a subperitoneal fibroid of the size of a walnut at the fundus uteri.

CASE 245.—A large multilocular ovarian cyst (left) with twisted pedicle (one and a half turns in the same direction as the hands of a watch). The tumour was adherent to the parietes, the large and small intestine, the omentum, the bladder, and the uterus, as well as to the right uterine appendages. It contained black thin fluid. The peritoneum was washed out with salt solution. The last confinement had taken place on Feb. 1st, 1904, and symptoms of twisted pedicle came on three weeks later.

CASE 246.—A tumour of the size of the uterus at four months. There were interstitial and partly submucous fibroids, one of which was undergoing cystic and mucoid change. The left ovary and tube were not removed. The chief symptoms were menorrhagia and dysmenorrhœa.

CASE 247.—Tubal pregnancy on the right side. A mass was found of the size of an orange, containing an amniotic sac and a fœtus two and a half inches long. This lay partly free in the abdomen and partly in sac bounded by right tube and ovary. The latter contained the corpus luteum. The right tube and ovary were removed. The left ovary was not removed, but as the left tube was closed and dilated it was removed. It contained bloody fluid. There was some free fluid in the peritoneum.

CASE 248.—The patient was in the hospital a month before the operation with a high temperature (102° F. often at night). On opening the abdomen and on separating the adhesions on the left side pus came up. The left tube and ovary were friable and were removed piecemeal, being universally adherent. It was uncertain whether pus was in the tube or outside it. The right uterine appendages being in a similar condition (though no pus was seen) were also removed. The patient died in 48 hours.

CASE 249.—A left ovarian cyst of the size of the uterus at seven months. It contained eight and a half pints of blood-stained fluid. There were no adhesions to the cyst, but the omentum stretched over it and was adherent to the anterior abdominal wall low down.

CASE 250.—The tumour reached up to the umbilicus. On operation it was found to arise from the left appendages. The peritoneum over the anterior surface of the cyst passed off to the left iliac fossa directly and to the sigmoid flexure above. The cyst was enucleated from beneath the peritoneum with great difficulty, the pus which it contained escaping freely. The left ureter was seen in relation with the base of the cyst. Neither the left ovary nor the tube was recognised as such. The right tube, dilated to the size of the thumb, was removed also with the right ovary.

CASE 251.—Operation for incomplete procidentia in a single girl where pessaries had failed.

CASE 252.—An emergency operation. The patient was admitted to hospital in a state of collapse and blanched, with a temperature of 96·5° F. and a pulse of 120. An intravenous infusion of saline fluid (five pints) was administered as the operation was begun. The peritoneum was full of blood and large clots. The pregnancy was in a rudimentary left uterine horn, which had ruptured. The amniotic sac protruded from the rent and had not burst until the operation. The fœtus was of the size at three months.

CASE 253.—The tumour reached to within two and a half inches of the umbilicus, to the right of the middle line. It was very tender. At the operation free blood and large clots were found in the peritoneum. The pregnancy was in the right tube, which had ruptured. The tube and ovary were removed.

CASE 254.—A left ovarian cyst rather larger than a cricket ball; it contained yellow turbid fluid. A small cyst in the right ovary was punctured and this ovary was left, as the patient particularly wished this done if possible.

CASE 255.—A right ovarian cyst. The pedicle was twisted one turn in the direction of the hands of a watch. It contained 26 pints 4 ounces of black fluid. There were no adhesions.

CASE 256.—At the operation numerous loose adhesions were found between the intestine, the bladder, and the omentum. These easily separated. Then a tumour of the size of a hen's egg was felt in the region of the left appendages. It was very adherent to the rectum and in the pelvis. Scissors were used partly in separating the tumour. Pus escaped as the tumour was being freed. The uterus was stitched up with one silkworm-gut suture as the patient had prolapse. She died nine days later from peritonitis.

CASE 257.—A left multilocular ovarian cyst containing jelly-like fluid. It reached two and a half inches above the umbilicus. There were no adhesions.

CASE 258.—A flattened and slightly generally contracted pelvis. The true conjugate was estimated to be two and three-quarter inches. The operation was performed a week before the date at which labour was expected. No attempt was made to sterilise the patient. The placenta was under the incision into the uterus. At a premature labour on July 10th, 1902, delivery was accomplished by cephalotripsy.

CASE 259.—The tumour was of the size of the uterus at three to four months. It had caused retention of urine several times. After removal the fibroid was found to be undergoing mucoid change. Both appendages were removed with the uterus. The left ovary was slightly cystic.

CASE 260.—A tumour of the size of a uterus at three months. There was an interstitial fibroid at the fundus undergoing marked cystic and mucoid change; the spaces on section were filled with jelly. Both Fallopian tubes were thickened and closed. The right appendages and left tube were removed with the uterus. The left ovary was not removed. The patient had had dysmenorrhœa and menorrhagia for a long time and was very anæmic at the time of the operation.

CASE 261.—A multilocular ovarian cyst on each side of the size of a child's head (one year). There was a large quantity of free fluid in the peritoneum at the operation. One cyst had burst before the operation. The walls of the cysts were very friable and contained yellowish fluid. No adhesions were present. The patient was four and a half months pregnant at the time of the operation and she miscarried within 24 hours. It was only 13 months since her last confinement.

CASE 262.—A left multilocular ovarian cyst of the size of a uterus at eight months, a relatively large proportion of the solid portions of the tumour really consisting of a multitude of small cysts. The fluid in

the cysts would not flow through the cannula. The uterus, which was moderately enlarged by fibroids, was not interfered with.

CASE 263.—A hard tumour, thought to be a solid ovarian; evidently calcified in parts. At the operation an ovoid tumour about three inches long by from one to two inches broad was found imbedded in adhesions in Douglas's pouch. Its surface was calcified. On section it showed a grey leather-like surface. The ovaries and uterus were not involved by adhesions or connected with the tumour in any way.

CASE 264.—A right multilocular ovarian cyst of the size of a child's head. There were no adhesions. The left ovary was healthy.

CASE 265.—Chronic inflammation of the uterine appendages; both tubes were closed and dilated to the size of a finger and were densely adherent in the pelvis. The pain dated from a confinement nine years before.

CASE 266.—Multiple fibroids. There was one subperitoneal fibroid of the size of a foetal head, which grew from the fundus and lay in the pelvis adherent there by recent adhesions. This fibroid on section showed softening and on scraping the surface material like cream cheese came away. The right ovarian cyst was of the size of a hen's egg; this was removed with the uterus. The left ovary was not removed.

CASE 267.—On opening the abdomen a considerable amount of free fluid was found. A cystic tumour was seen springing from the right side of the pelvis; it was more or less fixed. On inspection of the deep aspect of the tumour a large papillary mass was found about the middle of the lumbar spine. This projected freely into the peritoneal cavity and had infected the intestine and other parts where growths of a similar nature were seen. The cyst burst during this investigation. Nothing further was done as the growths were obviously malignant. The patient died eight days later.

CASE 268.—A left tubo-ovarian cyst containing foetid green pus. The outer (ovarian) part of the cyst, which was of the size of an orange, burst while getting it up. There were many adhesions in the pelvis. The peritoneum was washed out twice with salt solution.

CASE 269.—A right multilocular ovarian cyst of the size of a foetal head. There were no papillomatous growths on the inner surface. The left Fallopian tube was thickened and adherent at the back of the broad ligament. This also was removed; it was found to contain blood clot.

CASE 270.—A left ovarian cyst reaching to the umbilicus. It had burst before the operation and there was chocolate-coloured free fluid in the peritoneum. The uterus, which was considerably enlarged by multiple fibroids, was also removed. The right ovary and tube were not removed.

CASE 271.—At the operation there was much recent blood in the peritoneum. It was a right tubal pregnancy. The tube had ruptured within one inch of its fimbriated extremity, which was open. The right ovary contained a well-marked corpus luteum. The right tube and ovary were removed. The peritoneum was washed out with salt solution. The left ovary and tube were healthy. The patient was very anæmic.

CASE 272.—The operation was performed for uterine prolapse.

CASE 273.—Ovariotomy (double).

CASE 274.—A dermoid cyst of the left ovary reaching up to the umbilicus. The pedicle was twisted one and a half times in a direction opposite to that of the hands of a watch. There was intense congestion beyond the twist. Also a dermoid of the right ovary of the size of a potato. There was a little free fluid in the abdomen. There were no adhesions. Both tumours were removed entire. The pulse was 140 before operation and the temperature was 101·4° F.

CASE 275.—An operation had been performed four years previously by another operator in the country. He had only removed part of the tumour, leaving all the pelvic portion and presumably suturing the cyst to the abdominal wall. The patient had had a sinus from three to four inches deep, discharging freely ever since. I reopened the abdomen, having previously tied up the mouth of the sinus, and removed the rest of the tumour which was of the size of half a cocoanut. It was densely adherent to the rectum and the uterus. Two inches of the right ureter were exposed in dissecting up the tumour. The tumour was more or less solid and suggested malignancy, but I heard that the operator four years before had said that the tumour seemed malignant, so perhaps it may not prove so. The patient now is quite well and has no sinus.

CASE 276.—A large right ovarian cyst. It contained 21¼ pints o greenish fluid. There were no papillary growths nor were there adhesions. The left ovary was healthy.

CASE 277.—A left tubo-ovarian cyst containing three-quarters of a pint of thin yellow fluid. The area of the tumour formed by ovarian tissue was well shown by a clearly defined white line. The right ovary was normal.

CASE 278.—The tumour reached to the umbilicus. The right ovary was cystic and was removed with the uterus. The right appendages were adherent to the uterus. The left ovary was not removed.

CASE 279.—A solid tumour occupying the greater part of the abdomen. At the operation it was found to be a large subperitoneal fibroid connected with the fundus uteri by a pedicle half as thick as the wrist. To the posterior (under) surface of the tumour about 12 inches of small intestine and mesentery were closely adherent and required very careful separation and the bleeding points on the intestine several ligatures. During this separation an indiarubber cord was used round the pedicle of the tumour, as its surface where the adhesions were bled freely. The body of the uterus and the ovaries were not interfered with. The tumour weighed 12 pounds.

CASE 280.—A year previously the patient had had an incision made (not by me) in the left iliac region. Pus had come out and had continued to be discharged freely till the time when she came under my observation. With Case 275 in mind I thought it possible to deal with it. At the operation the sinus was found to be walled in by adherent bowel; it led to a portion of the left tube and ovary. The sinus was unavoidably put in communication with the general peritoneal cavity. A right pyosalpinx and ovary were removed at the same time. The patient died from peritonitis in three days.

CASE 281.—Pregnancy in the right Fallopian tube. This was adherent in the pelvis; its fimbriated end was closed. There was no free blood in the peritoneum. The right tube contained a tubal mole and was removed with the right ovary which contained a corpus luteum.

CASE 282.—Chronic inflammation of the right Fallopian tube and ovary; these were adherent in the pelvis. The uterus was bound down in the position of retroflexion by old adhesions. These were separated and the right tube and ovary were removed. Some small fibroids in the uterus were not removed. The operation was undertaken for chronic pain.

CASE 283.—The body of the uterus with a fibroid in the fundus was removed. The ovaries were not removed. After suturing the peritoneum over the cervical stump this was sutured to the abdominal wall as the patient had had prolapse.

CASE 284.—The tumour reached up to the umbilicus. The right ovary was removed with the uterus. The left ovary was not removed. (Chronic pain and menorrhagia.)

CASE 285.—A large left ovarian cyst bigger than a uterus at term. It had grown under the peritoneum and had completely separated the layers of the left broad ligament. The transverse colon was in front of, and adherent to, the tumour. Several inches of the left ureter were dissected from the base of the cyst which required extensive enucleation. The cyst contained thin black fluid. The abdominal wall was very fat.

CASE 286.—An irregular hard tumour reaching nearly to the umbilicus. At the operation there was found a subperitoneal fibroid at the fundus and an interstitial fibroid of the anterior uterine wall. The ovaries were not removed. (Menorrhagia and dysmenorrhœa.)

CASE 287.—A left multilocular ovarian cyst reaching to the epigastric region and causing great abdominal distension. It contained 20 pints 16 ounces of fluid. One portion of the cyst was composed of solid tissue like that of a fibroid; this had been felt in Douglas's pouch. There were adhesions to the omentum.

CASE 288.—A left ovarian cyst reaching to a hand's breadth above the umbilicus. It contained 11 pints 4 ounces of thin yellowish fluid. The right ovary was normal.

CASE 289.—A tumour reaching half way to the umbilicus. There were interstitial fibroids at the fundus and in the posterior uterine wall. The ovaries were not removed.

CASE 290.—A hard, irregular tumour reaching to above the umbilicus. The catamenia had ceased for five years. For the last few months the patient had had several slight losses of blood. On opening the abdomen a good deal of free fluid was found. Numerous secondary malignant growths were seen at various parts of the peritoneum. The tumour being obviously malignant the wound was closed.

CASE 291.—A hard, irregular tumour reaching to the ribs on the left side. Œdema of both legs was present. The deeper portion of the uterus and fibroids in it could not be got up till the peritoneum had been incised and this part of the mass had been enucleated. There were no adhesions. There was no trace of the right uterine appendages. The left ovary was not removed. The mass removed weighed 4 pounds 6 ounces.

CASE 292.—A tumour reaching to the umbilicus. Fibroids. One large interstitial fibroid lay in the supravaginal cervix and could not be brought up till the peritoneum had been incised and enucleation performed. This left a large raw surface with many bleeding points, to control which many encircling sutures were used. The left ovary was not removed.

CASE 293.—A right multilocular ovarian cyst reaching to the xiphoid cartilage. It contained 13 pints of dark fluid. The pedicle was twisted. There were adhesions to the abdominal wall and omentum. The left ovary was normal. There was œdema of the vulva before the operation.

CASE 294.—A right ovarian cyst reaching up to the umbilicus. On tapping it evidently contained papillary growths. Some pelvic adhesions were present. At one place there was a papillary growth on the outer surface of the right tumour. There was a left ovarian cyst of the size of a cocoanut, partly glandular, partly papilliferous. There were papillary growths of the size of shot on the intestine and at various points over the pelvic peritoneum. The uterus was slightly enlarged by small fibroids.

CASE 295.—Ovarian cysts of the size of large apples, one papillomatous on the outside. The left one was rather adherent in the pelvis. A lobulated subperitoneal fibroid was the chief tumour. Myomectomy was tried but the pedicle seemed to be unsafe, so hysterectomy was performed. Some other fibroids were found in the uterus. There was some free fluid in the peritoneum.

CASE 296.—The tumour in the abdomen reached to within one and a half inches of the umbilicus. There was a right ovarian cyst with twisted pedicle and many close adhesions to the small intestine. The left ovary was normal.

CASE 297.—A left ovarian cyst of the size of an egg; it was adherent to the rectum. The right ovary was healthy.

CASE 298.—A right multilocular ovarian cyst reaching three fingers' breadth above the umbilicus. The fluid would not pass through the cannula. There were some adhesions and while separating these the cyst burst.

CASE 299.—Both Fallopian tubes were dilated and closed externally and were adherent to the ovaries and the parts around. The left tube contained turbid thick fluid. The left ovary, which was enlarged to the size of a bantam's egg, contained half an ounce of greenish pus. The right tube contained yellowish-green pus.

CASE 300.—Exploratory laparotomy in a case of carcinoma of the body of the uterus. Numerous secondary growths were found at various parts of the peritoneum remote from the uterus, therefore the wound was closed.

A CASE OF BLACKWATER FEVER.

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THE following case of hæmoglobinuric fever may be of some interest, partly owing to its comparative rarity and partly owing to the fact that it is seldom, in the tropics, that so thorough an examination of the blood and urine can be made as was done in this case by my colleague, Dr. A. Balfour, director of the Wellcome laboratories in the Gordon College, Khartoum, to whose assistance I am much indebted.

The patient had had a previous attack of blackwater fever

about eight years ago, which was probably contracted in Central Africa and which developed in this country. He had had repeated attacks of malarial fever during the last four months—the rainy season up the Blue Nile—which he told me he did not trouble much about; he took quinine often in large doses up to 60 grains in a day. On Oct. 2nd he had apparently an ordinary attack of malaria. On the 3rd hæmoglobinuria commenced. The patient was rather alarmed owing to his previous attack. He was seen by an Egyptian practitioner. His bowels were opened and he passed a large quantity of urine which was very dark, almost black, in colour. The urine was not examined microscopically or spectroscopically nor was the patient's blood examined, as there was no good microscope in the station. The morning temperature was 101° F. and that of the evening 103°. On the 4th the condition of the patient was the same as on the previous day. He was reported to have passed 1900 cubic centimetres of urine in the last 24 hours which was almost black in colour. The temperature in the morning was 100·6°, rising to 105° in the afternoon and dropping to 103° in the evening. He was given a hypodermic injection (10 grains) of quinine in the morning and in the evening. On the 5th a similar condition prevailed. He was first seen by me at 6.30 P.M., when he was exceedingly blanched, with lips quite yellow. There was distinct jaundice though not deep in colour and frequent vomiting occurred, chiefly of bile. He was passing a large quantity of very dark urine and had very urgent desire to micturate but there was no pain in the loins. There was a good deal of headache and the patient was very restless and had had no sleep for the last two nights; the pulse was very fair. At about 7 P.M., contrary to orders, he got up to use a night stool and fainted; on coming round he was seized with a most severe attack of dyspnœa, with acute anginal pain over the cardiac region. I applied the only remedy at hand—a mustard leaf—which gave almost instant relief. He was taking very little nourishment but drinking a quantity of soda water and some champagne. The injection of ten grains of quinine was repeated morning and evening. The bowels were opened three times. The temperature in the morning was 100° and in the evening it was 102°. Ten grains of sulphonal (all that was available) were given with no result. Two grains of calomel were also given. On the 6th the patient was carried on to a steamer at 6.30 A.M. to go to Khartoum. No medicine was given on the journey. Milk and soda water and Benger's food were given every hour in small quantities and were well taken. There was no vomiting; there was some hiccough. The temperature was taken every two hours and only varied from 101·4° to 102°. The patient passed a great deal of urine, about eight times on the journey. I thought that that passed in the afternoon was of a lighter colour but could only judge by pouring it overboard. We arrived at Khartoum at about 6.30 P.M. after 12 hours' journey. The patient had complained rather of the throbbing of the engines but had stood the journey well. He was most carefully wrapped up and screened from any chance of a draught on the journey. His bowels were not opened till after his arrival in hospital. He was given 20 grains of sulphonal at about 6.30 P.M. and five grains of calomel at about 10 P.M. No more quinine was given. He still had a good deal of hiccough. On the 7th he had had a very fair night. He was rather delirious all day and seemed not to recognise anyone. He took nourishment very well—milk, soda water, Benger's food, barley water, and brandy (three ounces). Examination of the urine of the previous night resulted thus: it was hardly blood-stained; it gave a slight blood reaction; it was acid and contained some albumin; the sediment consisted of degenerated red blood corpuscles, numerous blood and epithelial casts, and tailed cells from the renal pelvis. Examination of the blood films taken the previous night was as follows: there were no parasites; there was marked degeneration of red corpuscles which stained badly and were vacuolated. Poikilocytes were present, as well as many polymorphonuclear leucocytes and blood plates. The patient had a weak pulse, was very restless, and had a good deal of hiccough. In the morning a pint of warm salt solution was injected into the rectum and half of it was retained. Two pints were similarly injected in the evening, one being retained. The patient passed a good deal of urine. His pulse averaged about 124; it was thin and compressible. His temperature varied from 100·8° to 101·2°. He was given bicarbonate of sodium (10 grains) four times in the day. On Oct. 8th he had had a bad night but was less delirious. He passed a number of small irritating stools during the night and all the day. There was no undigested milk in the stools. The rectum was washed out with an enema of warm water. He was still taking nourishment uncommonly well. There was no vomiting but still a good deal of hiccough. The blood contained no parasites. The urine showed a trace of albumin but no blood and very few casts and epithelial cells; it was very acid and full of uric acid crystals. The temperature varied from 101·4° to 102·4°. The pulse averaged about 120 and was weak. The patient was frequently sponged with tepid water and given some bicarbonate of potassium (15 grains) three times in the day. His general condition seemed improved. The urine was free from hæmoglobin, but his temperature was higher than on the previous day and he had a good deal of hiccough and diarrhœa. The jaundice and anæmia remained the same. On Oct. 9th he had passed some irritating stools during the night. He was given half an ounce of Kutnow's powder. He was less delirious but the hiccough continued. There were no parasites but some myelocytes were present in the blood. There was a quantity of uric acid in the urine. The temperature at 7 A.M. was 101·8°, at 11 A.M. it was 101·2°, and at 3 P.M. it was 103°. The patient seemed distinctly worse but I was not sent for. The temperature at 6.30 P.M. was 104° when the patient was seen by me. The pulse was 124 and soft. He was much worse; he was given a subcutaneous injection of quinine (seven grains) and sponged with tepid water. The temperature at 8 P.M. was 103·4°; at 9.30 P.M. it was 104·4°. He was then put in a warm pack for 20 minutes and afterwards wrapped in hot blankets for an hour. He did not stand the pack at all well, complained bitterly, and was with difficulty prevented from tearing the blankets off. He was given another hypodermic injection of quinine (seven grains) and a feed of hot Benger's food with an ounce of brandy. Only slight reaction of the skin was produced. At 10.30 P.M. his pulse was very weak and he was transfused with a pint of warm salt solution (one drachm to the pint) into the cellular tissue of the side and a hypodermic injection of strychnine (five minims) was given. At 11 P.M. the pulse was a little better and the temperature was 103°. His arms and face were then sponged with iced water which seemed most soothing. On Oct. 10th at 1 A.M. his temperature had dropped to 102·6° and he was dozing. At 2.30 A.M., while dozing, a sudden change took place and he died very quickly.

No thorough post-mortem examination was made but a portion of the liver and the spleen were examined by Dr. Balfour with the following result. The spleen: macroscopically its consistence was almost fluid; it was dark purple in colour; microscopically there were no parasites present and very little trace of malarial pigment. The general condition was somewhat like that found in splenic anæmia. The liver: macroscopically it was of a yellow, shrunken consistence, like leather; microscopically there were cloudy swelling, areas of degeneration, and atrophy of the hepatic cells; it was studded with yellow pigment; there was scarcely any trace of true malarial pigment. Slight cirrhosis was present but there were no parasites.

Remarks.—I think there is no doubt that we have here a case of hæmoglobinuric or blackwater fever. The symptoms of hæmoglobinuria, icterus, biliary vomiting, and acute anæmia occurring during an attack of malarial fever are typical and yet post mortem we find only a trace of malarial pigment in the liver or spleen, the condition of the former being somewhat similar to that of a case of acute yellow atrophy of the liver. This naturally brings up the question of the real connexion between hæmoglobinuric fever and malarial fever and the administration of quinine. We have a patient from a malarial district having frequent attacks of malarial fever, during one of which hæmoglobinuria occurs. In the absence of any means of examining the blood for parasites the administration of quinine was obviously indicated and in this case ten grains were injected four times over a period of two days. They cannot in this case have increased the hæmoglobinuria as that ceased within 24 hours of the last injection.

It is a great pity no film of blood was taken for future examination before the first injection of quinine. It was noticed that very extensive bruising occurred at the site of the injections, but I think the injections, none of which were administered by me, were given subcutaneously instead of intramuscularly.

In all cases of severe malarial fever there is a great liberation of hæmoglobin which is precipitated in the form of

yellow pigment in the liver; if this is still more excessive hæmoglobinuria is produced. This liberation of hæmoglobin cannot be simply from the infected corpuscles as it is far in excess of the number of infected corpuscles, continues after no parasites can be found in the blood, and non-infected corpuscles are found deficient of hæmoglobin. This bears out Sir Patrick Manson's theory that part of the hæmoglobin only is derived from these infected corpuscles which when sporulation occurs set free some toxin which is able to liberate hæmoglobin from uninfected corpuscles. This would account for the continuation of the hæmoglobinuria when there are no parasites in the blood.

How long does this toxic action last after parasites are absent from the blood? In this case the first specimen of blood examined was taken on the night of Oct. 6th and no parasites were found though at this time there was hæmoglobinuria. 24 hours later there was a trace of albumin but no hæmoglobinuria. Unfortunately, we are unable to say whether there were parasites in the blood on the 3rd, 4th, or 5th. With the cessation of hæmoglobinuria on Oct. 7th one would expect a more marked improvement than was the case if the toxin was only a liberator of hæmoglobin. May it not have some other toxic effect, or to what was the continuation of the fever due and the severe recurrence of fever on Oct. 9th? There had then been no parasites found in the blood for four days, nor were any found in the liver or spleen a day later. Yet on the assumption that the recurrence of fever on the 9th must be malarial in origin the injections of quinine were repeated.

This recurrence of fever in a patient, weak and exhausted from this drain of hæmoglobin, was the cause of death, though it cannot be called hyperpyrexia. The temperature went up to over 104° but was to a certain extent controlled by treatment. The least depressing methods of diaphoresis were employed—e.g., ice-sponging and wet pack accompanied with stimulants, brandy, strychnine, and saline infusion. No diaphoretic drugs were used except quinine. Free passage of urine and the absence of all renal pain were hopeful signs but I consider the persistent hiccough a useful sign for an unfavourable prognosis. I have seen no previous mention made of the great excess of uric acid crystals in the urine.

The treatment seems unsatisfactory. I did not understand the rationale of the treatment by large doses of calomel or chloroform pushed to intoxication, so these were not given. Quinine was given for the reasons mentioned. Other treatment was purely symptomatic. The treatment by bicarbonate of sodium appeared in some article on this disease lately and seemed indicated by the enormous amount of uric acid in the urine.

Khartoum.

TWO CASES OF ACUTE HÆMORRHAGIC PANCREATITIS.

BY H. W. WEBBER, M.D., M.S. LOND., F.R.C.S. EDIN.,
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CASE 1.—A man, aged 61 years, was suddenly seized with acute abdominal pain on July 24th, 1904. He had appeared to be in his usual health the same morning and after breakfast had walked a distance of about a mile to church where he was a regular member of the choir. About 12 o'clock sudden violent epigastric pain attacked him; he was taken to his home and medical assistance was summoned. In the afternoon the pain continued with signs of collapse and some abdominal distension. Dr. A. B. Soltau saw him in consultation with Dr. M. L. Griffin and thought the symptoms pointed to a ruptured gastric or duodenal ulcer. At 11 P.M. (Mr. S. F. Lynch assisting) I opened the abdomen by a four-inch median epigastric incision and the cavity was found to contain clear blood-stained fluid but no gastric or duodenal contents. The stomach and duodenum were rapidly examined for perforation, none being found, and it was then discovered that the normal outline of the pancreas was replaced by a tumour composed principally of coagulated blood of the shape and size of a closed fist which bled immediately it was handled. The patient being in no condition to stand a search for the exact source of the bleeding a thick gauze plug was passed well into the hæmorrhagic mass and brought out through the parietal incision which was partly closed by mass sutures of salmon-gut. A hypodermic injection of morphine (a quarter of a grain) and strychnine ($\frac{1}{30}$th of a grain) was given. The patient never rallied and died about six hours after the completion of the operation. No post-mortem examination could be obtained.

CASE 2.—The patient was an American, aged 59 years, but looking at least ten years older. He was said to have worked very hard at business for several years. He landed at Plymouth on the evening of June 11th, 1905, apparently as well as usual, and at 10 P.M. had some strawberries and an apple. At about midnight violent abdominal pain seized him with vomiting, and this continuing at 3.30 A.M. Mr. H. H. Parsloe saw him and gave him a quarter of a grain of morphine hypodermically. This was repeated at 10.30 A.M. on June 12th. At 5 P.M. on that day he tried to get out of bed, pain returned with intense collapse, and he became cold, grey, and pulseless. With the injection of brandy and strychnine, the application of a mustard leaf to the præcordium, and hot bottles to the extremities, he partially recovered from his collapse and at 6.30 P.M. I saw him with Mr. Parsloe. He was then ashy grey in face with coldness of the whole body, except the parts kept warm by the hot bottles and friction. The pulse could just be felt at the wrist. The abdomen was soft; it was not at all distended; there was no dulness anywhere or local swelling; there was some tenderness on palpating the epigastric area. The rectum was empty. The patient did not recover from his collapsed condition and died about midnight (June 12th).

Necropsy.—At the post-mortem examination (on June 15th) there was no free fluid or gas on opening the peritoneal cavity. The gastro-hepatic omentum was distended with blood clot. The stomach presented a remarkable appearance, a subserous layer of clot covering the upper two-thirds of the anterior surface, leaving its lower third of the normal whitish colour. The gastro-colic omentum, transverse colon, and great omentum were normal, but on turning these upwards to examine the posterior surface of the stomach a considerable amount of clot was seen through the posterior layer of the transverse mesocolon. On tearing through this and raising the stomach the source of the hæmorrhage was found to be the pancreas which was represented by an irregular hæmorrhagic mass of clot and pieces of pancreatic tissue. The whole mass of stomach and clot, &c., was removed for further examination but circumstances causing this to be deferred for two days it was then found in an advanced state of decomposition.

The antecedent personal history in the second case threw very little light on the patient's condition. Some years previously a successful operation for radical cure of a right inguinal hernia had been performed and for some months before his last illness he had complained of breathlessness on exertion.

In the first case there was a definite history of an injury. Seven months previously the patient, while rising to leave his seat on the outside of an electric tramcar, was thrown by a sudden jerk of the car violently against the handrail, striking himself on the left side of the lower part of the chest and fracturing his seventh rib. From this accident he made a very slow recovery, it being more than three months before he was able to resume his occupation.

Plymouth.

RUSSIAN ODONTOLOGICAL CONGRESS.—On July 17th the Fourth Pan-Russian Odontological Congress opened in the Blagorodny Society's Hall, St. Petersburg. There is little of the business done at the congress that is reported further than that it was decided that in future the Odontological Congress should be held every two years and that the next should be held in Moscow in June, 1907. The sitting of July 19th had to be suspended owing to disorders through a difference as to allowing an unqualified person to give an address; but on the 20th, according to the *Sviet*, those who went to attend found a notice posted on the door of the meeting place saying that the congress was finally closed and that the excursion by steamer would not take place by order of the Governor-General of St. Petersburg, which order was supported by a detachment of police.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

LONDON HOSPITAL.

A CASE OF TORSION OF THE OVARY IN A HERNIAL SAC.

(Under the care of Mr. HUGH M. RIGBY.)

A FEMALE child, aged three months, was admitted into the London Hospital on March 17th, 1905. On the previous day the mother had noticed a swelling in the right groin which was tender and appeared to cause the child a good deal of pain. It had gradually increased in size and the skin had become inflamed over it. The child had not vomited and the bowels had acted as usual each day. The following condition was found on examination. A globular tense swelling extending up to the right external ring occupied the upper part of the right labium majus. It was elastic, appeared to be very tender, and the overlying skin was inflamed and slightly œdematous. The swelling stopped abruptly at the external ring but a narrow neck could be made out passing up into the abdominal cavity. The swelling was irreducible and an impulse could not be detected. The abdomen was not at all distended. The child was ill-nourished and undersized but did not appear to be acutely ill. The swelling was thought to be an inflamed encysted hydrocele in the canal of Nuck.

Shortly after admission to the hospital an operation was performed as follows. An incision made over the swelling revealed a sac containing dark fluid blood. When this was evacuated a dark purple body, smooth and oval in shape, presented. When this was freed from the sac wall with the finger the Fallopian tube, easily recognised by its fimbriæ, was seen. The purple structure was evidently the ovary, deeply congested, nearly black, and very much enlarged. A narrow neck was found at the internal ring composed of broad ligament and Fallopian tube acutely twisted on itself. The neck was untwisted, transfixed with a pedicle needle, and ligatured with catgut. The ovary and tube were then removed. The right horn of the uterus appeared at the internal ring, apparently tethered in this position by a structure which felt like a shortened round ligament. The skin incision was then closed and a drainage tube was inserted. Owing to the child's condition no attempt was made to dissect out the sac or to close the ring. The subsequent progress of the case was uneventful.

Remarks by Mr. RIGBY.—Similar cases have been recorded by Lockwood,[1] Owen,[2] Morgan,[3] and Schnitzler.[4] They agree with my case in that they presented almost identical clinical signs and symptoms. The hernia was on the right side in every case. All the children were quite young—namely, 11 weeks, six months, six months, and eight months respectively. In each a tender, inflamed, irreducible swelling was present in the groin and the contents of the sac as revealed by operation were identical.

Lockwood draws attention to the fact that the ovary lies in front of the tube, thus reversing the normal condition in the pelvis. Schnitzler lays emphasis on the fact that in these cases of twisted ovary in a hernial sac the symptoms of intestinal obstruction and peritoneal irritation are practically absent. In my case this was a noticeable feature, there was no vomiting and the abdominal signs of disease were *nil*. In Owen's case some vomiting had followed the appearance of the tumour but in all the other cases this phenomenon was absent. This is in striking contrast with cases in which torsion of an ovarian pedicle occurs within the abdominal cavity; in these vomiting and acute abdominal symptoms are the rule. The laxity of the broad ligament which forms the neck of the herniated ovary accounts for the ease with which a twist may occur, even to the extent of two or three times on its own axis. This is on a par with the excessively long mesorchium which is found in cases of torsion of the corresponding male organ. It is possible that a shortened round ligament associated with a patent canal of Nuck may play some rôle in the production of a hernia of the ovary on the same side. It probably accounts for the fixation of the fundus of the uterus in the neighbourhood of the corresponding internal ring. Le Dentu[5] considers that strangulation of a herniated ovary and tube is generally due to a band formed by the round ligament.

[1] Lockwood: Brit. Med. Jour., June 13th, 1896.
[2] Owen: THE LANCET, March 21st, 1896, p. 765.
[3] Morgan: THE LANCET, May 15th, 1897, p. 1340.
[4] Schnitzler: Wiener Klinische Rundschau.
[5] Le Dentu et Delbet, Traité de Chirurgie, 1897, p. 819.

Reviews and Notices of Books.

Strength and Diet: A Practical Treatise with Special Regard to the Life of Nations. By the Hon. R. RUSSELL. London, New York, and Bombay: Longmans, Green, and Co. 1905. Pp. 649. Price 12*s.* 6*d.* net.

THE subject of national physique has attracted considerable attention recently and it is natural that the kindred question of diet should be brought into corresponding prominence. In medical publications many contributions to this subject have been made and we are glad to find a layman writing a book upon diet as affording a sign that general interest has been aroused on the national importance of food and drink in relation to health. It was therefore with considerable expectations that we opened the present volume and studied the author's views. We must frankly confess that we are disappointed in the substance of the book before us. The propositions which the author sets himself to prove are three in number: that under favourable conditions man can thrive on almost any kind of diet; that *ceteris paribus* vegetarian races are stronger and happier than nations living chiefly upon animal food; and that frugal persons and nations live better and longer than others and are more free from disorders of body and mind. The first and third of these will provoke little opposition in medical readers; the second is more controversial in character. When we examine the substance of the book which is intended to afford proof of these three propositions we find that it consists for the most part of a series of quotations from the works of other writers, and while admitting the modesty of the author who thus relies not upon his own observations or theories but on those of others, we must confess to finding the method as here exemplified unsatisfactory. The author shows most commendable impartiality in setting forth alike the opinions of those who are recognised authorities and of others who can hardly be included in such a category—of those who share his vegetarian views and of those who declare for the ordinary mixed diet affected by the majority of mankind. Little attempt is, however, made to coördinate the information given.

The book opens with an introduction which sets forth some evidence that civilised peoples are degenerating and includes incidentally a formidable list of ailments which "a medical man" has attributed to disorders of digestion; among them are included "consumption (alcoholic)"—apparently not meaning the consumption of alcohol—"bladder, kidney, and brain troubles; impure blood, nervous tremblings, &c.; cancer ..... coughs of many kinds ..... heart troubles of various kinds, hypochondria (*sic*), hysteria ..... lung troubles, neuralgia, noises in the ears, drunkard's paralysis, piles, rheumatism, sleeplessness, shingles, decayed teeth, dyspepsia, and uræmia." The list is as formidable as that of the maladies cured by any patent medicine but the author assures us that it falls short of the reality. Chapter I. deals with the proper diet of man as indicated by anatomical considerations and the author decides that our resemblance to the apes, which are frugivorous, proves

that the proper diet of mankind is vegetarian. We doubt whether the argument is sound, since it would be easy to select, for example, two birds much more closely resembling one another than a man and an ape, yet one of which was carnivorous while the other lived only upon seeds and vegetable matter. The argument for vegetarianism derived from man's anatomical characters—teeth and intestines—is not very cogent. Nor is that derived from a consideration of the comparative longevity of different species of living creatures at all convincing, since the long life of the tortoise and of the elephant can be paralleled by that of the whale and of the crocodile. But we are anticipating the order of the chapters of the book before us. The second chapter is devoted to a discussion of the comparative values of foods, while the third deals with the food of different kinds of animals. Chapters IV. and V. are devoted to the diet of ancient and mediæval peoples, while Chapters VI. and VII. deal with the food of existing races and communities. Chapter VIII., headed Personal Experiences and Observations, does not, as might be expected, contain a summary of the author's own conclusions but a collection of dicta of distinguished and other persons on the matter of diet. Subsequent chapters deal with medical testimony on dietetics with stimulants and narcotics, with diet in relation to disease, notably cancer, and with its regulation in training for athletics.

On the whole we can agree with the author in many of his conclusions, notably in his views that most well-to-do people at the present day eat too much, especially too much meat; that many drink too much tea; and that stimulants and narcotics are not at all necessary for healthy persons. We cannot admit, however, that a reasonable amount of animal food is harmful, at all events for nations living in temperate climates; nor do we think that the somewhat vehement insistence upon the horrors of flesh-eating which we here find, even when enforced by the anecdote of the child who on returning from feeding a pet lamb was horrified at reading a recipe for the cooking of sheep's head, is quite adapted to convert thoughtful persons to vegetarianism. However, we must admit that in his account of the diets of different nations the author has brought together a large quantity of interesting information and that his earnestness and diligence are beyond praise.

Psychological Medicine: A Manual on Mental Diseases for Practitioners and Students. By MAURICE CRAIG, M.A., M.D. Cantab., M.R.C.P. Lond. London: J. and A. Churchill. 1905. Pp. 449. Price 12*s.* 6*d.* net.

THIS work is intended to meet the requirements of the general practitioner and the student. It is essentially practical, as becomes its character and aim. A few preliminary pages are given to normal psychology but the space at disposal is no doubt limited. A separate primer of psychology might better meet the needs of the student in this direction.

Under Classification of Insanity the schemes of various authors are given. It is held that the only satisfactory classification is one on a pathological basis and this our present knowledge does not permit of. The author employs a general scheme drawn up from various classifications—a good working scheme but an unsystematic one. We prefer the more logical scheme of Krafft-Ebing, which is based on the presence or otherwise of constant pathological lesions. A chapter on General Symptomatology deals with various elementary manifestations of perverted mental function and various disorders of bodily function (vascular, respiratory, trophic, and the like) therewith associated. As the reader's attention is directed to the importance of noting the shape and the size of the head it would, we think, have been as well to point out that the body, as a whole, may be profitably examined for evidence of defect and abnormality and to have referred to the subject of the signs of degeneration, briefly indicating its bearings on the study of the insane. Under States of Excitement it is taught that a necropsy on the body of a patient who has died from acute mania reveals no signs of organic disease. There are surely exceptions to this rule and in acute delirious mania there are frequently very marked hyperæmia and œdema, facts of which we find no mention in the paragraphs on morbid anatomy. Some might prefer to say that death in cases of acute mania, including acute delirium, is due to toxæmia rather than to "exhaustion resulting upon starvation" as is taught here, but our present ignorance of the pathogenesis of these conditions precludes definite statement and renders argument unprofitable. Amongst methods of treatment of acute mania the prolonged bath is very properly recommended. Unfortunately, the Commissioners in Lunacy, by declaring the method to be a form of restraint where a cover is used, have practically put an end to this excellent form of treatment.

The subject of dementia præcox is treated on the lines of Kraepelin's teaching but the author would prefer to reserve the designation for the hebephrenic form, considering that the catatonic and paranoidal forms are with difficulty distinguishable from catatonic stupor and paranoia occurring at other periods of life. Later, he states that the diagnosis between the paranoid form and paranoia "may appear somewhat difficult. Nevertheless, the diseases are very different when carefully studied." The first statement, pointing to a real difficulty so great that the author would rather not include the paranoid cases under dementia præcox, is hardly consistent with the second which indicates an apparent difficulty only. The wisdom of describing stupor and catatonia in one chapter and the kinds of dementia præcox, some of which are not distinguishable from them (and no attempt is made under "diagnosis" of the latter state to distinguish them) in another is very doubtful. The practical result of this would seem to be the description of the same condition twice over merely because it happens to occur at different periods of life. In passing we may be allowed to protest against the perpetuation of the term "anergic stupor," that fascinating redundancy which has cast a spell over many generations of alienists. Paranoia, secondary and "organic" dementia (the latter a common designation but open, we think, to criticism), and the epochal insanities are adequately treated on the usual lines.

Senile insanity is divided into "functional" and "organic" psychoses for reasons of convenience; we agree with the author that this is not a scientific classification. The distinction between partially curable and incurable cases can be drawn, if necessary, on clinical lines. The intoxication psychoses are well described; the important differential diagnosis between alcoholic pseudo-paralysis and general paralysis is very well summarised. The chapter on General Paralysis is good. We do not notice any reference to the subject of the examination of the cerebro-spinal fluid. It appears to be certain that lymphocytosis is always present in chronic meningitis and it is, according to certain authorities, one of the early indications of progressive paralysis, in which connexion the subject of cyto-diagnosis assumes considerable importance. The traumatic neuroses and neurasthenia are briefly considered and we think they rightly find a place in a treatise on mental disorder.

Under Epilepsy and Insanity it is stated that "all the work of the present time goes to corroborate the view that the epileptic convulsion is largely dependent upon some vaso-motor disturbance in the cerebral cortex." But experimental work (to some of which reference is made) as apart from speculation makes out, we think, a better case for the toxic basis of epilepsy. Under the heading of Treatment we think a reference to the method of eliminating chloride of

sodium from the diet in conjunction with bromide treatment (Toulouse and Richet) would have been desirable. There is a useful chapter on Insanity and Physical Disease. Defective mental development is considered under the usual headings. Ireland's term, "genetous idiocy," is employed to designate a class. Surely the bulk of idiocy is "genetous" and the expression connotes nothing whereby a class is distinguishable. How can this expression adequately demarcate "a class of congenital idiot which does not rightly fall under any other division"? Discussing "moral insanity" the author gives classes of individuals in whom the moral sense may be affected; he thinks the term, if used at all, should apply to his class (*b*), "some children otherwise apparently normal." Why not also to class (*c*), "some men of genius"? Useful chapters follow on Feigned Insanity and the Relationship of Insanity with Law. Referring to medical certificates the author asks whether it is possible that the ready granting of such in doubtful cases of illness has led the lawyer to distrust in some instances the value of the evidence of medical men. In his gentle method of reproof the author displays a charming courtesy. Under Treatment we find a reference to the need for the prevention of the propagation of insanity. As regards "correction" of the insane (a term the author evidently prefers to "punishment"), it is represented that luxuries and pleasures can be stopped with benefit "apart from any desire to punish." The patient will probably judge from the action; for him there will not be much difference between correction and punishment. The book contains 22 excellent plates, mostly illustrative of the morbid histology of the cortex cerebri in mental disorders.

Notwithstanding that this work appears to lend itself in places to criticisms of the kind made above we believe that, as a whole, it is well adapted to the requirements of the class for which it is primarily intended. Avoiding, as far as possible, vagueness and theorising the book conveys practical information in a clear and an easy style and is characterised by good, sound sense.

New Methods of Treatment. By Dr. LAUMONIER. Translated and edited from the second revised and enlarged French edition by H. W. STERS, M.A., M.D. Cantab., Physician to Out-patients, Great Northern Central Hospital. London: Constable and Co. 1904. Pp. 321. Price 3*s.* 6*d.* net.

THERE are three prefaces to this book—one by the translator; one by the author, dated October, 1902; and a third also by the author, or perhaps it would be more correct to say an extract from a preface to the second edition, dated October, 1903. In one of these there is a sad picture of the plight of the medical practitioner who has scant leisure to read and his patient "who is often better acquainted with the latest fashion in therapeutics than is frequently supposed." The author's aim has been to supply "definite and complete information" concerning the new drugs and methods of treatment the worth of which has been established and which are sufficiently well known to be described in a "definite and practical manner." The translator is not so sanguine about the permanent value of the observations contained in this book since he states that it must include an account of a considerable number of methods which in the near future will be more or less likely to be replaced and superseded by others.

The subjects cover a wide range, including not only nutrition and blood alterants, respiratory, renal, and vaso-motor alterants, but also the curious group described under the heading of "Opotherapy." Sero-therapy, nerve alterants, antipyretics, and antiseptics are also dealt with. The different sections are very unequal. The section on the vaso-motor alterants seems unduly brief and that on opotherapy unduly long. With regard to the administration of opotherapeutic agents we are told that the method of ingestion by the mouth is by far the best (p. 197), but the enumeration of the different organs employed would act as a deterrent from general acceptation of this principle. There is much that is of interest concerning glycerophosphates, dionin, heroin, and some of the newer antipyretics, but many drugs of recent introduction are not included.

The translator states that he has endeavoured to bring the text into line with the English style and methods. French is so generally read with facility that the task appears to have been unnecessary. Many sentences in the English version are obscure and in the desire to ascertain the meaning the reader is under a constant temptation to try to translate back into French.

New Inventions.

NEW IMPROVED RECTAL SPECULUM WITH MAGNIFYING LENS ATTACHED.

ALL who have had much special practice in rectal surgery know too well how difficult it is in many cases to explore and to ascertain accurately the appearances *in situ* of growths, ulceration, &c., and to observe the normal and abnormal mucous surface of the rectum some inches up from the anal orifice. After careful exploration with the finger one would always like to have an ocular inspection of the cause of pain such as is produced by ulceration, hæmorrhage, abnormal growths, piles, or polypi in this region, and for such a purpose I have had an improved rectal speculum constructed which is easy of introduction with a split or space at the side

and open at each end, provided with a wooden plug, and having at its lower end a convenient handle to hold it by. Attached to the outer opening of the speculum is a metallic half-circular rim for the purpose of receiving a powerful magnifying glass lens which can be moved in any direction but can at the same time, if necessary, be permanently fixed by screwing the handle up tight so as to grip the metallic bar which holds the lens. This speculum and lens I have been using for the last few months and it admirably carries out the object in view. It largely magnifies and thus enables the surgeon to see plainly the exact condition of the mucous surface of the lower rectum. I have to thank Messrs. Mayer and Meltzer, 71, Great Portland-street, London, W., for the satisfactory manner in which they have carried out my ideas in its construction.

The plate which illustrates this description accurately depicts the speculum in question. To throw light into the speculum when introduced into the rectum a small electric light can be used with great advantage.

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THE BRITISH MEDICAL ASSOCIATION.

MEETING AT LEICESTER.

THE annual dinner was held in the County Assembly Rooms on July 27th when a large company sat down under the chairmanship of Mr. G. Cooper Franklin, the President. After the toast of "The King" had been duly honoured the toast of "The Imperial Forces" was proposed by the Bishop of Nottingham who remembered seeing the last wooden warship and the first ironclad. This was acknowledged by Fleet-Surgeon J. Lloyd Thomas and then followed Mr. M. C. Buzzard, K.C., who submitted the toast of "The British Medical Association." He asserted that the Association had done great service to the public as well as to the profession. After Dr. H. W. Langley Browne (chairman of the Council of the Association) had suitably responded, Dr. F. M. Pope proposed "The Mayor and Corporation of Leicester," to whom he said was due the success of the meeting. The Mayor of Leicester responded and paid a high tribute to the medical profession. The toast of "The President and Members of the Local Committee of the British Medical Association" was intrusted to Archdeacon Stocks, who discoursed on the marvellous progress of medicine and surgery and then discussed the virtues of the local committee. Mr. Franklin, the chairman, acknowledged the toast and then proceeded to give the toast of "The Guests," which was responded to by Professor Howard Kelly, whose speech met with a warm and enthusiastic reception. By this time the evening was far advanced and the subsequent proceedings were of an informal character.

Many of the members and their friends accepted the opportunity afforded to them of visiting the scene of some of Leicester's industries. The chief industries comprise the manufacture of boots and of hosiery, and Leicester also possesses more than one cigar factory. As an example of a boot factory the premises of the Coöperative Wholesale Society were visited and the various stages of the manufacture of boots were followed with interest.

The premises of Messrs. John Richardson and Co., Limited, manufacturing chemists, of Friar-lane, attracted very general interest, and quite large parties went through the various departments watching the processes concerned in the production of extracts, tinctures, tablets, pills, &c. The manufactory occupies a large site and the general arrangement of the departments was admirable, including a research laboratory, tincture rooms, percolation rooms, a pill mass factory, and so forth.

Those who travelled to Leicester by the Midland Railway route were impressed with the excellent service of that line and the ample accommodation afforded in the trains. In most of the trains a sumptuous and comfortable luncheon and dining car was included, in which an excellent, because simple, meal was served at a moderate price. The lavatory accommodation was also good. The fastest trains accomplished the journey, which is one of just upon 100 miles, in 105 minutes. The Great Central Railway has also a good service of trains and their route lies through the prettier country of the two.

The nineteenth summer general meeting of the Irish Medical Schools' and Graduates' Association, which we are informed now numbers 856 members, was held on July 26th at the Young Men's Christian Association building, Leicester. There was a very large attendance of members. In the absence of the President, Sir William Whitla (Belfast), who wrote to express his regret at being unable to be present, Mr. Alfred Freer, as the senior foundation member present, was voted to the chair. The chairman called on the Provincial Honorary Secretary to address the meeting in reference to the question of the monopoly of honorary hospital appointments in England. The Provincial Honorary Secretary then detailed the efforts that had been made—in four cases successfully—to have the exclusive rule repealed which restricted these appointments to those holding the diplomas of two particular colleges. He said that there was prominent in the English character the love of justice and that when the governors of any institution in which the restrictive rule existed had it brought home to them how unfair it was (now that all territorial distinctions were abolished by law between the three kingdoms as regards medical qualifications) to put obstacles in the way of those holding such high qualifications as the Fellowship of the Royal College of Surgeons in Ireland and the Membership of the Royal College of Physicians of Ireland they gladly carried out the principle of the "open door" and repealed the obnoxious rule. But the difficulty was the expense of bringing the facts of the case under their notice. He was glad, however, to say that with the prospect before them of a large accession of new members the Council had determined to enter soon upon another assault on a monopoly fortress and he was sanguine of the same success as had attended similar efforts at Bristol, Hastings, Brighton, and elsewhere. The proceedings concluded with a vote of thanks to the chairman, who said he was old enough to remember the instructions which he received in Dublin 50 years ago from the teachers in what still was recognised as the best practical school of obstetrics in the United Kingdom, if not in the world.

The annual luncheon of the Continental Anglo-American Medical Society took place at Leicester on July 27th. Professor Osler presided and was supported by the following members of the society: Dr. StClair Thomson, Dr. H. E. Leigh Canney, Dr. W. Page May, Dr. H. O. Hobson, Sir Michael Foster, Dr. D. E. Anderson, Dr. M. W. Gairdner, and Dr. F. M. Sandwith. Amongst the guests were Professor R. W. Boyce (Liverpool), Dr. W. J. Tyson (Folkestone), Dr. W. Ewart (London), Dr. P. Watson Williams (Clifton), Professor A. R. Cushny, Dr. Bertram L. Abrahams (London), Dr. A. J. Chalmers (Colombo), Dr. Camac (New York), and Dr. G. Wells (Chicago). There were no formal speeches but Dr. Sandwith reminded the members that the next meeting of the society will take place in Paris in October during the Congress on Tuberculosis when it is hoped that there may be an unusually large gathering. Dr. Ewart, on behalf of the guests, returned thanks to the society for the hospitality shown to them.

The number of members of the British Medical Association attending the annual meeting who play golf has of late been gradually increasing and this year they were especially fortunate in the enjoyment of the hospitality of the Leicestershire Golf Club. On July 28th a match was arranged between England and Scotland, Wales, Ireland, and the Colonies in which the victory rested with the representatives of England. Before the match a very enjoyable lunch at the golf-house was partaken of by the players. A vote of thanks to the Leicestershire Golf Club for its great hospitality was proposed by Dr. J. Playfair, President of the Royal College of Physicians of Edinburgh, and cordially seconded by Dr. F. M. Pope. The President of the Leicestershire Golf Club, Mr. B. W. Russell, duly acknowledged this

compliment and then the match commenced. The result was as follows:—

ENGLAND v. "THE REST."

England.		*"The Rest."*	
F. Bolton Carter	1	F. Todd	0
Nathan Raw	0	George Rose	0
T. J. Verrall	1	Chalmers Watson	0
J. Thompson	0	M. Moore	1
A. Biddowes	0	R. R. Young	0
J. H. Mummery	1	H. A. Latimer	0
K. W. Goadby	0	Ewen McClean	1
W. Dutton	0	C. Pattison	1
R. Boyd Joll	1	C. R. Salisbury	0
R. Lamb	1	N. Walker	0
T. G. Ouston	0	H. Taylor Young	0
L. E. Creasy	1	J. Playfair	0
J. F. Colyer	1	Sinclair White	0
T. Brown	1	T. Shennan	0
	8		3

We publish the following story which one of our representatives on his way to the sections heard at a labour meeting in the Market-square at Leicester, not at the British Medical Association, firstly, because it has a medical flavour and, secondly, because it shows that the working-classes are quite alive to the manner in which they may be cheated. There was a man in ——— who kept a small draper's shop and who had an assistant who was new to the business. One day an old lady came in and asked for some silk. The youthful assistant showed her some, saying, "We can do this for you at 6*s*. 6*d*. a yard." The old lady asked for something better but the assistant replied that they had nothing better. Whereupon the master came forward and said to the assistant, "I'm surprised at you showing this lady stuff of that quality, take it away and put it back on its shelf." Then, turning to the customer, he said, "You must excuse my assistant, madam, he is new to the business but if you will allow me I will show you something very superior." He went away and returned bringing the same piece of silk. "This, madam," he said, "is a very superior article, 10*s*. 6*d*. a yard. If it were not for the fact that I bought it some time ago we should have to charge you 15*s*., for, as you are doubtless aware, owing to the recent epidemic among the silkworms the price of silk has increased enormously of late." The customer took the silk, paid for it, and went away. The draper thereupon lectured his assistant, saying, "You'll never make a man of business, you've no commercial adaptability; mark my words and remember what I said for the next time." A few days later the draper was having his dinner, leaving his assistant at the counter. Hearing a noise he looked out and saw the same old lady belabouring his assistant with her umbrella. He separated them and asked the assistant what he had been doing. "Oh," said the assistant, "I was merely carrying out your instructions. She asked for some tape and I showed her some. I said, we can let you have this at 8*d*. the dozen yards. If it wasn't for the fact that we have had it in stock some time we should have to charge 1*s*., for, as you are doubtless aware, owing to the recent epidemic among the tapeworms, the price of tape has gone up enormously of late. Then she hit me with her umbrella."

THE SECTIONS.

MEDICINE.

THURSDAY, JULY 27TH.

Dr. HOWARD H. TOOTH (London) opened a discussion on

The Pathology, Diagnosis, and Treatment of Various Forms of Acute Meningitis.

He said that during the last year 45 cases of meningitis of various forms had been under observation at St. Bartholomew's Hospital. They were tabulated as follows:—

Variety.	Recovered.		Died.		Total.	
	M.	F.	M.	F.	M.	F.
Tuberculous	0	0	13	9	13	9
Posterior basic	4	2	5	0	9	2
Pneumococcic	0	0	0	2	0	2
Streptococcic	0	0	3	0	3	0
Purulent (undetermined)	1	0	3	3	4	3

Such factors as might be considered of importance in differential diagnosis were briefly considered and among others the following: 1. Earliest symptoms of onset. 2. Duration. 3. Mental symptoms. 4. Eyes: optic neuritis, common in tubercle, less so in other forms; earliest appearance of optic neuritis. 5. Squint: mostly internal; very common; often transitory; almost invariable in the posterior basic form. 6. Other forms of paralysis. 7. Tonic muscular spasm; retraction of the head; opisthotonos; rigidity of limbs (Kernig's sign), almost invariable in posterior basic, less so in other forms; cerebellar irritation, its probable cause; hypertonicity of cerebral origin (for example, in spastic diplegia) contrasted with cerebellar; the variability of reflexes in cerebellar. 8. Fever: general remarks on types; the relation of the pulse and respiration to fever; tendency to progressive acceleration of the pulse and respiration, irrespectively of the temperature. 9. Lumbar puncture. The prognosis was most favourable in posterior basic cases as a whole. Out of 11 cases six recovered. The chances of recovery seemed to be greater the older the patient. Tuberculous and pneumococcic cases were invariably fatal. The mortality would appear to depend on the generalisation of the inflammatory process, this tendency being least marked in posterior basic cases.

Dr. T. J. HORDER (London), in dealing with the pathological aspect of the subject, insisted on lumbar puncture as of prime importance in determining the nature of the organisms which could be directly demonstrated or inferred from the chemical and histological characters of the fluid. The needle employed should be three and a half inches long in the case of adults and two and a half inches in that of children. A line across the iliac crests traversed the fourth lumbar vertebra and the puncture might be made either above or below in the third or fourth interlaminar space, the needle being directed from a point half an inch to one side of the middle line forwards, inwards, and upwards. The cerebro-spinal fluid should flow spontaneously without the aid of suction whether disease was present or not. When clear and free from albumin or cells it might be considered healthy. Albumin and cells were present with meningitis and in greater quantity when pyogenic organisms were present, polymorphonuclear cells being especially plentiful (90 per cent.), whereas in tuberculous and meningococcic cases scanty and small lymphocytes were found. The meningococcus was most often found but was sparsely distributed. For cultures a blood agar medium proved the most satisfactory, but in 15 tuberculous cases these proved sterile. In two cases rapid improvement appeared to follow puncture. The blood examination demonstrated a high leucocytosis in meningococcic infection, a medium one in tuberculous, and the smallest in streptococcic, owing probably to the intense intoxication. In pneumococcic and meningococcic disease the blood stream was infected so that there was some general septicæmia, and in cases showing pneumococci and meningococci with nasal and aural discharge these organisms were demonstrable in them. 50 per cent. of the tuberculous cases were generalised from glands in children and from the joints, bones, or lungs in adults. The distribution of the organisms in meningococcic infection was hæmophilic (intracellular). Injection of cultures in animals induced virulent blood infection but not the characteristic lesions. Pneumococcic infection was either pure or mixed with others. The surgical cases involving the ear and nose were mostly streptococcic. Local mixed infection appeared less common than was ordinarily stated and was usually secondary to old ear disease, but mixed infections of the blood and general system were common. Post-mortem examination showed pia-arachnoid disease, but in middle-ear suppuration the subdural space was principally affected. Suppuration occurred

most rapidly with pneumococci, rather less so with streptococci, and though fatal meningococcic cases proved purulent this was probably not the case in life and in those which recovered. Tuberculous effusion occurred principally at the base of the brain and in the Sylvian fissures but there was some variation. The pneumococcus and meningococcus produced effusion in the posterior basic region. All cases of acute meningitis were cerebro-spinal.

Professor W. OSLER (Oxford), referring to epidemics of cerebro-spinal meningitis, said that the disease was limited to certain districts or cities; it never became pandemic. During the past six to eight months cases had occurred in some numbers in New York and in Silesia after an interval of 30 years. A few cases occurred also in Ireland. Sporadic cases followed on epidemic. Posterior basic or cerebro-spinal meningitis must be regarded as one of the most fatal diseases of early life, although from 30 to 50 per cent. of the sporadic cases recovered. Pneumococcic and meningococcic forms were easily mistaken for one another. The germs presented but slight vitality outside the body. They occurred in the buccal and pharyngeal secretion and had been isolated in 9 per cent. of healthy men in the nasal mucus. Entry was probably effected through the sphenoidal cells rather than by the ethmoidal foramina. Contagiousness was illustrated by the conveyance of the disease with fatal effect to medical attendants and nurses and resembled that of pneumonia; it was also shown by a series of rapidly fatal cases in a house epidemic. In one series of 93 cases of meningitis investigated 35 proved to be tuberculous and 32 meningococcic. Meningococcic meningitis was characterised by the occurrence of purpura and sometimes arthritis. The spinal sometimes overshadowed the cerebral symptoms and in all cases the specific coccus could be identified by lumbar puncture. Recovery was limited to this form of leptomeningitis, 17 of the above-quoted 32 cases getting completely well, though in one case sight was lost. On the other hand, the 21 pneumococcic cases, all the tuberculous and the mixed infections of tubercle and streptococci, as well as the pure streptococcic ones, died. Lumbar puncture should be repeated when the tension of the cerebro-spinal fluid was high (300 millimetres). As in pyæmia the meningococcus might invade the circulation, occurring in the joints. The exudate on the meninges cleared off, as had been observed in one case which had been exposed in operation and which died some months later from paraplegia.

Dr. H. MONTAGUE MURRAY (London), referring to the duration of cases, said that those in which the onset was definite lasted about one month, while others with indefinite onset were protracted to three months.

Dr. F. M. POPE (Leicester), the President of the Section, made some remarks on cases of pneumococcic cerebro-spinal meningitis. He also referred to a case of pachymeningitis hæmorrhagica in a child exhibiting signs of intracranial pressure whose cranium was opened, allowing escape of fluid from the subdural space, but who subsequently died.

Dr. C. N. B. CAMACK (Cornell University) spoke of the value of examination of the nasal secretion and of the various micro-organisms which had been identified, including the micrococcus catarrhalis and the influenza bacillus.

Dr. S. WEST (London) described the curious periodicity of respiration in meningitis: (1) Cheyne-Stokes form with intervals of 40 seconds of apnœa and then periods in which the respirations attained a maximum of 120 per minute, the general average being maintained; and (2) grouped respiration with pauses of ten seconds, slow and equal, so that the total only amounted to from eight to ten per minute. Recovery sometimes occurred in the latter form, never in the former.

Dr. STCLAIR THOMSON (London) said that suppuration occurred in the accessory cavities of the nose as frequently as in the middle ear of the child and called for the more systematic investigation of the nasal cavities in post-mortem examination. He referred to cases of cerebro-spinal rhinorrhœa and of sinusitis which proved fatal.

Dr. W. B. WARRINGTON (Liverpool) described some points in staining the organisms and referred to a case in which the finding of pus by lumbar puncture had contra-indicated operation for abscess in connexion with the ear.

Dr. T. F. S. CAVERHILL referred to a recent outbreak of cerebro-spinal meningitis in which fatal cases had been returned as pneumonia, in one case a boy who had gone to bed well being found dead next morning.

Dr. TOOTH, in reply, said that pneumococcic meningitis accounted for some very rapidly fatal cases. He also suggested that many epileptic cases might be the sequels of recovery from cerebro-spinal meningitis.

Dr. NATHAN RAW (Liverpool) read an interesting paper entitled

Human and Bovine Tuberculosis, with Special Reference to Bovine Infection in Children,

in which, while confirming the German view of the difference between the two micro-organisms, he insisted upon the danger of bovine tuberculosis to human beings in that they were liable to contract tuberculosis in either form, though the distribution and course of the disease might be diverse. Bovine tuberculosis affected young people, was traceable to infected milk, and affected the tonsils, the alimentary tract, the glands, and, through the blood, the meninges, the bones, the joints, and other parts, while human tuberculosis was air-borne and affected adults by way of the lungs as pulmonary phthisis. In evidence of this Dr. Raw indicated the rarity of pulmonary phthisis in infants and children and, on the other hand, the comparative rarity of other than pulmonary lesions in adults, and suggested, further, that early tuberculous disease, presumably bovine, appeared to be protective against phthisis, as the development of pulmonary tubercle was relatively rare in those of a strumous diathesis who had suffered in infancy from bone and gland lesions. It might be, similarly, that cattle would be protected against bovine tuberculosis by the attenuated virus of the human form. Dr. Raw stated that it was not uncommon to find from 20 to 25 per cent. of cattle in various herds suffering from tubercle, though in only about 2 per cent. were the udders affected; but even then there would be a plentiful supply of bacilli in the mixed milk. This matter was of great importance in the inspection of cattle and dairies and also in connexion with imported milk products, as the disease was more prevalent in some countries, such as Denmark, than in England. In an investigation of 400 cases of tuberculosis in infants in only two cases could the possibility of infection be traced to the mothers, all the others having been fed on cow's milk.

Dr. R. PRATT (Leicester) said that the source of tuberculous infection was easily discoverable in cattle, as pus and blood were removed from the tuberculous udders with the milk. In an investigation into the dust of certain tenements it was found that the material obtained from the houses in which tuberculous persons lived contained the bacilli while that of the dwellings of healthy people did not. In the process of separating and sterilising milk the amount of dirt and foreign matters, including mucus and such things as had been already mentioned, was astounding.

Dr. F. H. JACOB (Nottingham) reported the discovery of tubercle bacilli in milk microscopically.

Sir WILLIAM BROADBENT (London) emphasised the importance of the statements made, which meant that they must accept two distinct varieties of tubercle.

Dr. WEST said that there were rare cases in which pulmonary tuberculosis resulted from direct extension from caseous glands. The stress of the disease evidently fell on different tissues at different ages. Whatever view was held they were driven back to the origin of tuberculosis in milk and their first duty was the rectification of the milk question.

Dr. F. J. POYNTON (London) read a paper upon

The Employment of Citrate of Sodium in the Feeding of the Infant.

Two years' experience of the method had confirmed him in the opinion of its value which was indicated in a paper published in THE LANCET of August 13th, 1904. The principle of the method consisted in adding citrate of sodium to cow's milk and thus altering the clot. The acid caseinogen combined with the sodium of the sodium citrate to form a casein curd which was of lower molecular weight than when calcium was the base, and hence the curd was finer and looser. The calcium, on the other hand, combined with citric acid to form calcium citrate which, much diluted by the stomach contents, was absorbed into the system and was not lost to the economy. The changes in the curd were illustrated by a series of tubes and Dr. Poynton insisted that this method was quite different in effect from the well-known device of adding sodium bicarbonate, which, as he demonstrated, hardly altered the consistence of the clot. This method was serviceable (1) in weaning the healthy infant; (2) for enabling the child to take cow's milk in a more concentrated form; and (3) for correcting milk dyspepsia. It was cheap and did not introduce the danger

of scurvy. On the other hand, it was not a powerful remedy in the sense of being antibacterial or antitoxic, nor would it be effectual in dyspepsia from excess of fat. A very useful routine proportion was one grain of citrate of sodium to the ounce of milk. This could be increased if necessary to two or three grains to the ounce.

Dr. H. W. GARDNER (Shrewsbury) spoke in confirmation of the value of this method of treating milk both in adult invalids and in infants.

SURGERY.

THURSDAY, JULY 27TH.

The meeting of the section commenced with a discussion on

The Treatment of Malignant Disease of the Rectum,

which was opened by Sir CHARLES B. BALL (Dublin), the President of the section. He first showed a series of lantern slides which illustrated chiefly the anatomy of the rectum, but some showed the varieties of new growth. He pointed out that the published statistics of radical operations for the removal of malignant disease varied considerably, both as regards the immediate mortality of the operation and the question of recurrence. The subject had been previously discussed at an annual meeting of the Association but it was thought that the time had come when it might be useful to review the large amount of work already accomplished, to endeavour to estimate the real progress that had been made, and to define the scope of the various operations for extirpation of carcinoma of the rectum. No sensational innovations were to be looked for at present but they could study with a judicial mind which methods should be accepted as standards until the time came to which all looked forward with confidence when the cause of cancer should be discovered and they should learn how its cure might be effected, perhaps by a hypodermic injection or some rays. Of recent years the results had been more encouraging and this might be due to many causes, such as early diagnosis, the better selection of cases, greater attention to the preparation of the patient, and improved methods of operation. An early diagnosis was of the first importance, for only too often were cases seen in which slight diarrhœa had gone on for months or a considerable loss of blood at stool had been attributed to piles when a simple rectal examination would have revealed a cancerous mass which, left undetected, became incapable of removal. The importance of these slight symptoms was now more widely recognised and therefore many more cases were seen at an early stage of the disease. Digital examination was, as a rule, simple, as the ordinary form of adeno-carcinoma generally lay within reach of the finger. The operation of radical extirpation of malignant disease of the rectum had been much discredited by operations on cases which were far too advanced, for in these the immediate risk was great and if the patient should survive the operation recurrence was almost certain to follow. Statistics, as in so many other cases, were most misleading in carcinoma of the rectum but it was certain that if the columnar-celled carcinoma of the rectum was operated on early, before the tissues surrounding the rectum were much involved, the results were admirable, both as to the immediate recovery and as to freedom from recurrence. In his own practice there had been several cases of undoubted columnar-celled carcinoma which had survived the operation for from 10 to 15 years without any recurrence. In selecting a case for operation attention should first of all be paid to any evidence suggesting the presence of secondary infection either in the liver or the deep lymphatic glands of the abdomen. Then the mobility of the malignant mass should be examined and if found to be freely moveable the case was suitable; but every increase in the degree of fixation increased the dangers and difficulties of the operation and the probability of recurrence. The preliminary preparation of the patient was of great importance. The patient should be fed with food likely to leave but little residue and the bowels should be freely opened with purgatives for four or five days before the operation, and on the day preceding the operation a copious enema should be given to empty the colon completely, while on the night before the operation an opiate would check the peristalsis. The rectum should again be washed out two hours before and immediately preceding the operation with a 2 per cent. solution of creolin. In this way it was possible to diminish largely the risk of infection of the wound. If it were not possible to effect this through evacuation of the colon on account of the tightness of the stricture a previous colotomy was clearly indicated but in most cases this would be unnecessary, and, indeed, objectionable, as it caused delay and subjected the patient to a double operation. As to the method of operation, the perineal route was probably still the best if the disease involved only the anal canal and especially if the whole circumference of the canal was not affected. In all other cases the choice lay between the sacral route and the abdominal. After the removal of a malignant growth of the rectum by the perineal route incontinence of fæces was very likely to occur if the growth involved the anal canal. Sepsis was very common after wounds which opened up the rectal wall above the pelvic diaphragm, because blood and serum were liable to become widely diffused and became suitable media for the growth of bacteria. It was therefore very necessary to close the deeper portions of the wound by deep sutures or to make due provision for drainage. Sometimes it was possible to prolapse the entire disease through the anus and in such a case excision could be easily carried out, and the wound having been sutured the bowel could be returned within the anus. For the sacral route Sir Charles Ball preferred the following modification of Kraske's operation. The skin having been cleansed an incision was made from the middle of the sacrum to within an inch of the anus; then with an American pruning shears the ligaments were separated from each side of the coccyx; a cut was then made through the fifth sacral vertebra and the triangle of bone was removed. The rectum being then exposed the peritoneum was opened early on both sides and a loop of bowel drawn out. The rectum was ligatured above the growth and then below, the malignant mass being removed. Sometimes it was necessary to make a sacral anus, as when it was impossible to free the upper segment sufficiently to bring it down. Exceptionally it might be possible to unite the cut edges after resection and if successful a very perfect result was obtained, but usually the stitches gave way under the strain of the passage of fæces. It was better to suture only the front and sides of the bowel, leaving the hinder portion open, a later plastic operation closing this opening. For most cases, however, Moulonguet's operation was best. He dissected out the lower portion of bowel to the upper surface of the pelvic diaphragm and the entire mucous membrane down to its junction with the anal canal, the sphincter being carefully preserved. The upper end of the bowel was then freed sufficiently to bring it out at the anus without tension, where it was then sutured. In three cases Sir Charles Ball had, in removing a carcinoma of the rectum, excised also a portion of the posterior wall of the vagina to which the growth was attached but rapid recurrence occurred in all. The abdominal route had probably not yet assumed the position in surgery to which it would ultimately attain. By the abdominal incision it was possible to estimate the extent of the disease and the amount of lymphatic involvement, so that if the disease were too extensive a colotomy might be performed. By the abdominal route also it was easier to control the hæmorrhage and there was also little risk of causing peritonitis. Many cases which had been treated by the trans-sacral route would have been better treated by the abdominal method. It was not necessary to terminate the abdominal method by a permanent colotomy but in many cases it was possible to bring down the divided colon to the anus and fix it there with perfect sphincteric control. It was well in this operation to have the patient in a very elevated Trendelenburg position so as to leave plenty of room in the pelvis. The abdomen was opened by an incision separating the fibres of the left rectus muscle. A loop of pelvic colon was drawn out and the point where the mesocolon was longest was determined; the colon was then ligatured and divided and the lower portion of the mesocolon was divided bit by bit and tied, and then by blunt dissection the bowel could be cleared down to the pelvic diaphragm and tied and divided. The upper portion was then brought out at the anus and fixed there.

Professor HARTMANN (Paris) said that since 1896 he had treated 64 cases of malignant disease of the rectum. In 43 palliative treatment only was possible and in these he had performed an inguinal colostomy and in this operation he brought up the peritoneum to the skin and fixed the colon but did not open it. Two days later he made a small opening into it with the actual cautery. Of these colostomy cases one died. In 21 cases he had found it possible to excise the growth of the rectum. When it was possible to remove the growth through

the anus it was necessary to bring the bowel down and preserve the anus. If this was impossible the best method was to establish a sacral anus. He never performed a preliminary colotomy. In one case a patient was alive now, more than five years since the excision of the malignant growth, and there were many others which had survived for shorter periods without any signs of recurrence. Of the 21 cases only one died. The most important point in treatment was early diagnosis.

Mr. F. SWINFORD EDWARDS (London) considered excision of malignant disease of the rectum to be a satisfactory operation if the surgeon could be certain of removing the whole disease. The site of the affection made little difference but early diagnosis was essential. If by digital examination the growth could not be detected the proctoscope should be employed and Strauss's instrument was probably the best. The mobility of the growth could only satisfactorily be determined under an anæsthetic. His cases which were of long enough duration to be considered were 40 in number and of these three died, a mortality of 7·5 per cent. In one case ten years had elapsed without any sign of recurrence; but, on the other hand, in one case recurrence had occurred after eight years, if indeed it could be called a recurrence. According to his experience villous tumours often became carcinomatous. In Kraske's operation he was in favour of direct end-to-end suturing of the divided bowel and even though a temporary fistula formed the ultimate result was good. There were three points on which he laid stress: (1) If the peritoneal cavity had to be opened a preliminary colotomy was very advisable; (2) he endeavoured to avoid opening the peritoneal cavity when possible, as thus the risk of the operation was materially lessened; and (3) he doubted if it were ever advisable to remove only a portion of the circumference of the bowel even if only one part should be involved, because of the very great tendency possessed by malignant growths of the rectum to spread round the bowel.

Mr. F. C. WALLIS (London) said that the advisability of attempting the removal of a carcinoma of the rectum depended on its situation, its fixation, and the general condition of the patient. When the trans-sacral route was advisable he employed a division of the bone in the shape of an inverted V in place of a transverse division as it gave more room. When necessary a temporary sacral anus might be established, a subsequent plastic operation closing it. Sepsis in rectal operations was avoided with great difficulty and therefore the utmost should be done to sterilise the contents of the bowel. Mr. Wallis showed some lantern slides illustrating his remarks.

Mr. SINCLAIR WHITE (Sheffield) described and showed the specimen of a case of growth of the rectum in which a little tube looking like a vermiform appendix was present. In his opinion it was a persistence of the neurenteric canal. With regard to the operative treatment of malignant disease of the rectum his experience in the main confirmed the statements of previous speakers. He had had 26 cases of Kraske's operation with nine deaths and of the cases recovering from the operation only four had passed the three years' limit without recurrence, and of these two had strictures and one had a fistula. In his later cases of Kraske's operation he had been in the habit of splitting up the rectum from the anus into the sacral wound and dissecting out the disease. Except in very early cases he always performed a preliminary colotomy and amongst other advantages it enabled the surgeon to examine the disease from above.

Mr. A. B. MITCHELL (Belfast) suggested that it might be advisable to begin the operation of excision of a malignant growth of the rectum by Kraske's method by dissecting up the mucous membrane and ligaturing it in order to avoid infecting the posterior wound. The value of the abdominal route was hardly proved but he had recently seen described an operation by a lady surgeon which seemed to promise well.

Mr. T. G. ATKINS (Cork) expressed the hope that medical men would diagnose more early than hitherto cases of malignant disease of the rectum by paying attention to slight symptoms, such as mucous diarrhœa. A rectal examination should be made and the Trendelenburg position and deep anæsthesia were of the greatest value in diagnosis, as was also Strauss's aeroproctoscope. The possibility of removing a malignant growth of the rectum depended on its mobility, the absence of extensive disease of the lymphatic glands, a fair general condition, and the absence of metastases. The operation should be as aseptic as possible. When the sacral route was employed the bone should not be divided at too high a level, for the abdominal route was more suitable for any growths which were not easily accessible through the sacral incision.

Mr. J. LYNN THOMAS (Cardiff) pointed out the very great discomfort and worry caused by the presence of an artificial anus. He showed a specimen of a large malignant growth of the rectum which he had excised by the abdomino-perineal route.

Mr. E. STANMORE BISHOP (Manchester) had had 35 cases in which he had excised malignant growths of the rectum. He thought that it was necessary to consider together malignant growths of the rectum and the sigmoid flexure. In many cases he held that it was not possible at first to decide as to the malignancy of a rectal tumour. The symptoms were often untrustworthy, but in his opinion the symptom of most value was some definite alteration in defæcation. He was strongly in favour of a preliminary colotomy. He always employed Kraske's operation or the abdominal method. The preliminary colotomy was of great value in removing dilatation of the bowel and the muco-colitis which was generally present.

Mr. E. DEANESLY (Wolverhampton) expressed the opinion that in any patient it was perfectly possible to remove the whole rectum. One important contra-indication was the involvement of the bladder or ureters. He did not share the dislike for a palliative colostomy expressed by a previous speaker, for if the fibres of the abdominal muscles were separated and not divided they would form a sphincter. Moreover, a large enema every morning would make the patient comfortable for the day. In inoperable cases curettage was very useful; it removed the discharge and pain and it might be repeated several times. He had discarded the perineal route. In the sacral operation he preferred the prone kneeling position. He had employed the abdomino-perineal route in one case which did well but he preferred the trans-sacral route.

Mr. C. RYALL (London) always examined these cases under an anæsthetic as it was otherwise impossible to estimate the suitability of the case for operation. If there was any doubt he always gave the patient the chance. He did not consider a preliminary colotomy necessary and it was undesirable, for the trans-sacral operation was serious and a preliminary colotomy undermined the patient's strength. He regarded all malignant growths as infective and therefore took the greatest care to prevent the growth being torn or cut, and he thought it of great importance to obtain early healing as thereby the chance of infection was lessened. The deeper parts of the wound should be firmly closed so as to leave no cavities. The sooner in the operation the peritoneal cavity was opened the better, as the surgeon knew where he was.

Mr. J. JACKSON CLARKE (London) pointed out that there were some cases of ulcerative colitis which simulated high rectal carcinoma. He was in favour of an exploratory incision near the middle line of the abdomen, by which much could be learned and, if necessary, a colostomy could be performed. He was inclined to think that in the future the sacral route would become rare.

The PRESIDENT of the section, in closing the discussion, congratulated Professor Hartmann on his very successful series of cases of extirpation of rectal carcinoma. In reference to Mr. Sinclair White's specimen he said that he was inclined to attribute the little tube-like body to a persistence of the post-anal gut. He agreed with several of the speakers that the abdominal route would become more common. He referred also to a case of his own where he performed inguinal colotomy for inoperable rectal carcinoma, but two years later there was no sign of any disease in the rectum and he was able to close the colotomy opening. He said he might mention that no serum of any kind or even violets had been employed in the case.

Mr. SINCLAIR WHITE read a paper on

Gastro pyloro-duodenostomy.

This operation is that which was referred to at Wednesday's meeting as "Finney's operation" and Mr. White described the operation and illustrated it with some diagrams. He considered the operation to be of great value as the opening could not contract. He thought it worthy of a prolonged trial.

Mr. C. P. CHILDE (Southsea) read a paper entitled

An Unusual Condition of the Large Intestine associated with Carcinoma in Two Sisters, together with Carcinoma of the Rectum in a Third Sister.

The first patient was 35 years old and for nine years had had rectal symptoms, mucous discharge and tenesmus.

There was a large carcinomatous ulcer in the rectum with many polypoid growths. Seven inches of the bowel were removed by Kraske's operation but the patient died. Numerous other polypi were present higher up the bowel. The second sister was 32 years of age and was admitted into the hospital at the same time. For four years she had had a rectal discharge of blood and mucus. Here also was a malignant ulcer of the rectum with multiple papillomata. This patient refused operation. The third sister was 34 years of age and had had no symptoms till she saw her sisters in the hospital. She then complained of pain in the back and when examined was found to have a large mass on the anterior wall of the rectum but no polypi. The father had died from some rectal trouble. The first two sisters had occupied the same bedroom, and often the same bed, for ten years but they had never used the same enema syringe. The third sister had often visited them for a week at a time and had slept with each of them, though she had lived in London. Harrison Cripps had mentioned these cases in one family with multiple papillomata of the rectum. Further, out of 14 cases of multiple papillomata of the rectum recorded three had ended in carcinoma. The cases he had described suggested an infection.

The PRESIDENT of the section said that he considered these multiple papillomata to be very similar to the ordinary warts on the hands which were well known to be infectious.

Mr. L. A. BIDWELL (London) read a paper on a case of

Cystic Tumour of the Omentum.

The patient was 62 years of age and grew steadily thin and weak. Ascites was present and he was tapped and four gallons of blood-stained fluid were removed. A mass was felt below the liver and was thought to be malignant. He was tapped at intervals and at last it was thought advisable to explore the abdomen and the tumour was then removed. It was found to arise from the omentum and consisted of round and spindle cells. The patient was well eight months later.

STATE MEDICINE.

THURSDAY, JULY 27TH.

Dr. L. A. WEATHERLY (Bath) introduced a discussion on

Sanatoriums for the Poorer Consumptives.

He stated that he believed in the value of sanatoriums, for they had undoubtedly done good, even if high-down expectations had not been fully realised. He would discuss the subject chiefly under the heading, Were such sanatoriums necessary and, if so, how were they best started and maintained? He believed they were necessary; no other treatment had been so efficacious in *arresting*, he would not say *curing*, the disease; no other means so effectually provided good air and a full diet and nothing was so useful for the purpose of teaching the tuberculous patient how to live. Tinkering of cases in backyards, with home worry and poor food, only brought discredit upon the treatment. He thought that sanatoriums for the poorer classes might be of three grades. First, those which should be provided by the boards of guardians for the poorest. These might either be special buildings erected for the purpose or special wards allocated at the Poor law infirmary. The guardians had the power in their hands and should use it. It was proper and it was economical. Out of 769 boards he had found that only 18 per cent. were doing anything for their consumptives. The next class of poor were those who could not afford to pay the usual sanatorium fees and to provide for those help must be obtained from county and district councils, from the working classes themselves, from manufacturers, and from the philanthropic public. Thirdly, there should be sanatoriums for those who could pay from 25*s.* to £2 weekly. He knew from actual experience that a sanatorium of 60 beds would pay its expenses at 25*s.* per week from each patient. Any profit which might arise from such sanatoriums should go to help Class No. 2. The difficulties at present in the way of effective treatment of the poorer consumptives were chiefly that the sanatoriums were hopelessly too few, that early diagnosis was neglected, and that patients were even now averse very often to take the advantage of sanatorium treatment.

Dr. PHILIP BOOBBYER (Nottingham), the President of the section, observed that there was no doubt necessity for sanatoriums for the poor of several grades. He believed that corporations could well set an example to other bodies by providing at a small cost, or even gratuitously, accommodation for their people. He would venture to condemn hasty conclusions on insufficient or improperly interpreted statistical data in reference to the benefits of sanatorium treatment. Such was, if nothing else, a most valuable education to all classes.

Dr. T. F. S. CAVERHILL (Edinburgh) gave the experience of that city and showed that in the artisan class, both among men and women, every fourth person died from tubercle. For these practically no sanatoriums were provided.

Dr. R. SHINGLETON SMITH (Bristol) was convinced that sanatorium treatment was vastly superior to any drug treatment. It was still necessary to preach the gospel of fresh air. Let fresh air come first and drugs second. Sanatorium treatment was greatly needed for the poorer classes for the arrest of the disease and the prevention of further infection. It was worth while to carry it out even for the poorest.

Dr. T. N. KELYNACK (London) believed that the original boom in sanatoriums was passing. He considered that the chronic tuberculous patient from amongst the working classes was often the best when considered from the economic point of view. He pointed out the question of the psychology of the poorer consumptive and that there was a danger of inducing a species of "consumptive casual" who went from institution to institution. The term "cure" was unjustifiable. The general health was much improved but the local state remained unaltered. A thorough inquiry into the whole subject was most desirable.

Dr. NATHAN RAW (Liverpool) pointed out what was being done in Liverpool with a very fair amount of success. Municipalities ought to take up the matter, boards of guardians dealing with the cases in their province. Early diagnosis was greatly needed.

Dr. W. B. RANSOM (Nottingham) said that the whole matter turned on the questions of advantage and cost. He was certain that sanatorium treatment had come to stay. It enabled at least one quarter of those treated to have another four or five years' working life. He emphasised the necessity of after-care and the desirability that cases should be watched in a hospital for a month before being sent to a sanatorium.

Dr. C. E. REINHARDT (London) showed the magnitude of the subject and pointed out that it involved a huge financial question which was worth tackling and solving. He believed strongly in the chalet type of sanatorium as being cheaper and more effective than large buildings.

Dr. T. WHITESIDE HIME (Bradford) alluded to the decline in phthisis during the last 40 years and believed that much good came from preventive measures.

Dr. C. R. DRYSDALE (London), speaking from a long experience of the disease before the introduction of sanatoriums, was quite convinced of their value, but showed that with present accommodation it was quite out of the question to treat more than the fringe of the cases.

Dr. T. D. LISTER (London) referred to what was being actually done by one class of the poorer members of the community, the thrifty class. Dr. Weatherly had spoken of the German Industrial Assurance sanatoriums and their success. The nearest approach in this country to universal insurance was afforded by the great friendly societies and labour organisations. Some of the leaders of the great friendly societies in London inquired into the German system and visited the German industrial sanatoriums with Dr. A. P. Hillier. As a consequence a movement originated which resulted in the birth of the following scheme. It was proposed to erect a sanatorium for 200 patients suffering from early phthisis on a site of 250 acres which had already been acquired. About 60 patients will be allotted to a central sanatorium building in connexion with the administration departments, the remainder in "chalets," or rather "ward pavilions," of substantial but inexpensive construction, not of wood. The essential feature of the scheme was that before the building was opened every one of these 200 beds would be reserved, endowed, and maintained by levy on the members of the respective societies and organisations affiliated for this purpose in proportion to their respective needs. No cost for maintenance would fall upon the public. In the first expenses of erection and establishment of the institution help was being sought from the friends of the societies. The executive represented something like 2,000,000 workers. The Post Office had joined in the movement with about 25,000 of the employés in this department. To achieve success for the scheme three things appeared to be necessary. Firstly, early diagnosis, as

all who had to treat phthisis knew only too well, was essential. Secondly, the coöperation of the patients was necessary and that would be obtained through their medical men and through their own trade journals and the magazines of the friendly societies by means of articles. The organisation of these societies and the superior intelligence of workers who think it worth while to join with their fellows should render this work fairly easy. Thirdly, there must be an attempt to prevent relapses. It was proposed to teach patients in whom the disease was arrested new occupations on the farms and otherwise on the estate and it was hoped that in this way selected cases might be fitted for a return to wage-earning under new conditions and arrest might be permanent.

Dr. J. E. MOLSON (Chelmsford) suggested that tuberculin treatment might be carried out in sanatoriums and showed how effectively Brighton was dealing with its cases.

Dr. KELYNACK read a paper on

Alcohol in Relation to National Vitality.

The public were deeply interested in the question and practical reformers were turning to the medical profession for direction and guidance. The conclusions of the recent Inter-departmental Committee on Physical Deterioration were dogmatic so far as alcohol was concerned. It was much to be desired that the recommendations should be carried out. The formulation by authoritative medical opinion of satisfactory and scientific teaching on the principles of temperance in the elementary schools was greatly needed. The Association had done much through its inebriates committee to secure many advantages for the inebriate and to advance national legislation and to secure the establishment of suitable institutions for both the curable and the irreclaimable classes of alcoholics.

The PRESIDENT of the section stated that from his student days he had been in accord with the dictum that alcohol was a poison and this was being conclusively re-proved by the many investigations of the present day. Alcohol did more harm to the community than any other agent.

Dr. DRYSDALE had always believed alcohol to be a poison and the whole of the profession was coming round to this conclusion. He believed that next to consumption alcohol claimed more victims than any other cause of disease.

Mr. W. MCADAM ECCLES (London), as one of those who presented evidence to the Committee on Physical Deterioration, pointed out that the conclusion in the report was decisive and one which deserved that the recommendations which were based upon it should receive prompt and emphatic attention.

Dr. ROBERT JONES (Claybury), as the other witness on the subject of alcohol before the Committee on Physical Deterioration, desired to emphasise the remarks of Mr. Eccles and to point out the convincing proof there was that alcohol was a terribly potent poison to growing tissues.

Dr. E. SYMES-THOMPSON (London) urged that action should be taken on the lines of the committee's report. The medical profession was a force in education which was of the greatest importance and if used in the right way must attain its object.

Dr. V. H. RUTHERFORD (London) said that it was interesting that no one appeared to be in favour of alcohol and that this attitude of the profession created a serious responsibility. He was sure it was necessary to reduce the temptation that existed on every hand towards alcoholism.

Dr. REINHARDT alluded to the fact that a few years ago he had difficulty in not giving alcoholic beverages to tuberculous patients in sanatoriums, but that now owing to the altered trend of public opinion it was quite easy to discard them and for the last two years none had been taken by any of his patients. In this and in other ways there was a distinct improvement.

Dr. J. WARD COUSINS (Portsmouth) said that in estimating the effects of alcohol on national vitality it was important to remember that only a very small proportion of the harm wrought was preserved in statistics, because the present method of death certification rendered it almost impossible that deaths due to alcohol could be fearlessly so recorded. The death certificate should be the confidential document of the State; then, and only then, would the true facts come to light.

Mr. W. SOLTAU ECCLES (London) felt that while instruction in temperance should be given in the elementary schools throughout the country the same should be available at the public schools. It was highly desirable that boys in the time-honoured public schools should not have alcoholic beverages placed before them.

It was then proposed by Dr. KELYNACK, seconded by Mr. MCADAM ECCLES, and carried unanimously, that the Council of the British Medical Association should be asked to appoint a committee to investigate the relationship of alcohol to national vitality.

Dr. H. R. KENWOOD (London) read a paper on

Hygienic Training and Teaching at School.

The ignorance among the poor of household management and of the principles of hygiene was responsible in no small measure for their high preventable mortality, their inferior physique, their intemperance, and their poverty. Education in these matters constituted an important measure in preventive medicine. What was wanted, as Sir John Simon said, was that education which by model and example would lead the poorer classes of society to know cleanliness from dirt, decency from grossness, which would teach them to feel the comfort and profit of sanitary observances, and would apply their instincts of self-preservation to the deliberate avoidance of disease. Healthy bodily development could be secured by physical exercises, combined with object lessons inculcating the recognised importance of fresh air, cleanliness, &c. A "sanitary conscience" should be created in the rising generation. Parents as well as the children would probably need instruction and to this end the employment of female health visitors was most desirable. There was a wide distinction between what was necessary for the teacher to know and what it was right for the children to be taught. One should impress simple hygienic rules upon the scholar, giving graphic reasons for the same, and he should be trained in hygienic habits while at school. What was adequate could probably be taught at the cost of one half hour per week during the last two years of compulsory school attendance, always providing that the scholar was receiving the object lessons of hygienic surroundings and practice during the whole of the school life. The aim, therefore, should be to instil elementary principles of hygiene which relate to the person and the home; as, for instance, the importance of, and the way to secure, fresh air, cleanliness of surroundings, person, habits, healthy bodily functions, suitable clothing, food, and temperance in alcohol. Female children should, in addition, be taught the principles of cooking, selection of food, and the feeding and management of infants. Few things more impress themselves upon the scholar than when one of their number is singled out for some special duty. It would therefore be a most telling thing if one scholar in each classroom were constituted the sanitary monitor for each week. It would be his duty to see that the ventilators were open, that the classroom was well flushed with fresh air upon every available opportunity, that cleanliness obtained, that dust did not accumulate, and that all sanitary requirements were observed in the use of the sanitary conveniences provided.

Dr. J. T. C. NASH (Southend-on-Sea) read a paper on

Shell-fish and Typhoid Fever

in which he made the statement that he was of opinion that a proper control of the production of shell-fish would secure a noticeable reduction of typhoid fever and a slight reduction of diarrhœa in the morbidity and mortality returns. Local evidence went to show that in Southend there was but little typhoid fever apart from contaminated shell-fish. The incidence of typhoid fever in London and Essex had diminished considerably during the last two years and this was coincidently with a lessened consumption of oysters fed with improved methods of cooking cockles. At Southend much care was now taken with cockles which were collected at places remote from any recent sewage contamination. They were not relaid in polluted waters but were cleansed in pure water and steamed in galvanised iron coppers with lids for five minutes and all subsequent washings were carried out with pure water in clean metal receptacles. Consequently the reduction of typhoid fever in Southend during 1904 was about 90 per cent. as compared with the average incidence of many former years.

INDUSTRIAL HYGIENE.

THURSDAY, JULY 27TH.

Dr. J. H. BELL (Bradford) opened a discussion on

Anthrax.

He mentioned that the connexion of the British Medical

Association with the subject of anthrax dated from 1862, when Dr. William Budd of Bristol read a paper on the occurrence, hitherto unnoticed, of malignant pustule in England. In the following year Dr. Budd, at the request of the Association, drew up a memorandum "on the investigation of epidemic and epizootic diseases," in which he anticipated the discoveries of Lister, Pasteur, Koch, and others regarding the bacterial origin of diseases. At several later annual meetings of this Association papers on anthrax had been read, so that these meetings appeared to have been centres from which a knowledge of anthrax had been spread abroad. Dr. Bell then referred to the valuable researches of Dr. T. M. Legge on industrial anthrax in the Milroy lectures of this year. He drew special attention to the fact that a distinct and definite disease might repeatedly attack persons in a community and yet escape detection. Anthrax had come to them from the Far East and probably stalked abroad in this country for generations before it was recognised as a separate disease. In the year 1872, the year in which the maximum amount of dry hides was imported into this country, such an acute observer as Bryant of Guy's Hospital stated that he had no personal experience of the disease and yet surely many cases of both internal and external anthrax must have occurred among the workers in hides in that neighbourhood, which was close to the centre of the London anthrax district. In 1882, though the quantity of infectious dry hides imported had decreased, yet the number of fatal cases of anthrax increased, pointing to the fact that the disease was overlooked in the earlier period. In London anthrax districts workpeople had been educated to know the appearances of the cutaneous form of the disease and had been warned of the danger of slight injuries to the skin and of the importance of applying at once for medical treatment. Internal anthrax was very often not recognised until it was too late to avert a fatal result, the milder cases seeming so simple and like an ordinary cold. The diminished quantity of dry, dusty, infectious hides and the increased weight of wet hides imported had lessened the frequency of attacks and reduced the number of pulmonary cases. In Bradford the prevailing type of the disease had changed from the pulmonary to the cutaneous form, which was due, first to the greater care taken in foreign countries where the materials were packed to exclude "dead" fleeces, and secondly, to the precautionary regulations which had been enforced in factories where noxious materials were manipulated. Whether noxious wools and hairs could be disinfected by steam at 230° F. without injury to the material for manufacturing purposes was a question which remained to be tested scientifically. Dr. Bell predicted more than 25 years ago that pulmonary anthracæmia would be found at Kidderminster, Halifax, Norwich, Leicester, and other places, which prophecy had been fulfilled. He now ventured to predict that this form of anthrax would be found wherever persons inhale dust arising from infective materials, whether these be wools, hairs, hides, skins, rags, or anything else. The Factory and Workshops Act required the notification of all cases of industrial anthrax. It was very desirable that that notification should be extended and made to include all cases, industrial, agricultural, and others. This should be as complete and general as it was with regard to animals under the Diseases of Animals Acts. Dr. Bell suggested that in addition to the wool-sorting regulations, copies of which were placed in all wool-sorting rooms, a notice should be fixed on the wall of each room where possibly infective materials were manufactured advising workpeople of the symptoms of external anthrax and of the importance of seeking medical advice at once if there was any suspicion of infection. With regard to treatment, the remedy for all kinds of anthrax was at present Professor Sclavo's anti anthrax serum, introduced into this country by Dr. Legge and commented on in his Milroy lectures. Many cases of cutaneous anthrax recovered without medical or surgical treatment; a greater proportion recovered if the lesion had been excised, but the greatest number recovered when excision was combined with injection of serum. For internal anthrax serum was the only remedy. Unfortunately, the patients were generally dying before the diagnosis could be made, when it was too late to do any good. Dr. Bell therefore recommended that when persons who had been exposed to anthrax infection were taken ill the illness, no matter what its nature, should be reported to the manager of the department at once; that the patient should be seen by a medical man on behalf of the firm; and that in all cases, except where anthrax could be positively excluded, 40 cubic centimetres of serum should be injected at once and repeated if necessary to determine the diagnosis. By this treatment in the earliest stages of the disease before a correct diagnosis could otherwise be made some lives would be saved and so far employers would be relieved of the incubus of the Workmen's Compensation Act.

As Mr. J. L. STRETTON (Kidderminster) was unavoidably absent his remarks were read by the honorary secretary, Mr. C. F. BRYAN. Mr. Stretton laid stress upon the difficulty of diagnosis of the disease and said that it would be an advantage if permission could be obtained to perform inoculation experiments in centres where anthrax was likely to occur. It appeared that cases of anthrax occurring in workers in factories must be reported to the Home Office, cases occurring in other human beings were not reportable at all, and cases occurring in cattle must be reported to the Board of Agriculture. Here they had three sets of cases, two of them governed by a dual authority, which was always unsatisfactory, and the third under no control whatever. Mr. Stretton referred to several cases in illustration of this point which had occurred in his private practice. One was that of a youth who worked in a garden and became infected with anthrax. It was ascertained that a brother who occupied the same bed was employed in a factory sorting Persian wool. This case was not notifiable, so the presence of anthrax in the factory would be unknown to the Home Office. Many cases in animals were due to the refuse from factories being used as manure; but as these were not reportable to the Home Office it might be unaware of the fact. The Home Office took no action with respect to the infected individual. The Board of Agriculture slaughtered animals affected with anthrax and cremated the bodies. This method of disposal of bodies should apply to human subjects also. All cases should be reported to the same authority and action ought to be taken with regard to the infected body, the domicile, and the fomites. The treatment of these cases should not be conducted in the wards of a general hospital. Special wards should be provided by the manufacturers and insurance companies who were the gainers by efficient treatment. Professor Sclavo's serum was a great advance and for cases of anthracæmia and malignant anthrax œdema was the only treatment which they could adopt. In malignant pustule it was their only hope where it was impossible to excise the pustule but when excision was possible it should be practised in addition to inoculation.

Dr. W. H. HORROCKS (Bradford) remarked that many cases of both external and internal anthrax were unnoticed, which fact must vitiate any statistics on the subject. As regards anthracæmia a peculiar state of well-being occurred which was very deceptive and generally preceded a fatal issue. He agreed that treatment should be a combination of serum and excision when possible.

Dr. DAVID GOYDER (Bradford) mentioned the results of the commission on wool-sorters' disease appointed by the Bradford Medico-Chirurgical Society and the necessity in treatment of some such serum as that advocated by Dr. Legge. The course of internal anthrax was so rapid and the insensibility of the patient to his dangerous condition was so complete that he was rarely seen by a medical man until he was in the jaws of death. There was no time for treatment in that case. All other kinds of treatment had been tried but nothing had answered until this serum was introduced and he advocated an extended trial of its efficacy.

Dr. H. W. LANGLEY BROWNE (West Bromwich), the President of the section, said that he had not had much experience of anthrax, as he did not live in a district where it was common. He found benefit in external cases from antiseptic treatment and was accustomed to apply strong iodine liniment with a brush to the part affected and over that gauze soaked in a 1 per 1000 solution of perchloride of mercury, then cotton-wool, and a firm bandage over all.

Dr. BELL, in reply, laid stress upon the early injection of serum and upon the importance at the same time of excising the affected part in external anthrax. He did not agree with Mr. Stretton that cases of anthrax should not be admitted into the wards of a general hospital.

GYNÆCOLOGY AND OBSTETRICS.

WEDNESDAY, JULY 26TH.

Dr. HERBERT R. SPENCER (London), the President of the section, opened the proceedings by welcoming their guests, Professor Wertheim (Vienna) and Professor Howard Kelly

(Baltimore). He alluded to the pathological museum in its gynæcological aspect and thanked Dr. Louisa Garrett Anderson for her efforts in that direction. He then called upon Professor WERTHEIM to read his paper on

The Diagnosis and Treatment of Cancer of the Uterus,

and thereby to open the discussion set down for the section. Professor Wertheim began by describing the steps of his operation by means of some excellent drawings as follows: (1) the vagina was disinfected and the growth on the cervix dealt with in a like manner; (2) the abdomen was then opened; (3) the rest of the peritoneal cavity was carefully packed off from the area of operation; (4) the posterior layer of the broad ligament was opened and the ureter carefully and gently isolated; (5) the peritoneum on the front of the cervix and bladder was reflected forward; (6) the peritoneum on the posterior aspect was treated in a like manner; (7) the tubo-ovarian and infundibulo-pelvic ligaments were then tied and divided and bleeding vessels were clamped; (8) the finger was passed under the broad ligament along the ureter and the uterine vessels were felt and secured; (9) the vagina below the cervix was clamped by his clamps and the uterus and vaginal reflexion removed; (10) the bleeding from the vaginal stump was arrested by sewing round the cut edge; (11) the glands around the iliac vessels were removed; (12) the wound area was packed with gauze brought out through the vagina; (13) the peritoneum of the pelvic floor was closed; and (14) the anterior abdominal wound was closed in the usual way. If the ureter was injured or sloughed as the result of interference it would be necessary to perform nephrectomy and those cases (three) in which he had to do nephrectomy had borne the subsequent operation satisfactorily. He showed tables of exhaustive and singularly searching statistics bearing on the operation on 179 cases and clearly demonstrated that in this series of what were considered hopeless inoperable cases by the vaginal operation that quite 30 per cent. were free from recurrence after five years and if certain factors were taken into consideration some of the cures showed a rate of 70 per cent. of five years' cure-limit. In the matter of diagnosis the importance of early recognition if necessary by curetting and microscopic examination was insisted on. With regard to treatment: (1) it was established that the results to be obtained by his abdominal hysterectomy considerably surpassed the results of vaginal extirpation of the uterus; many cases operated on by the abdomen were inoperable by the vagina; (2) the cause of the greater result was chiefly to be attributed to the fact that in addition to clean operating the surrounding tissues were taken away by the abdominal operation; (3) the extirpation of the cancerous regional glands appeared to be of some relative value, most of the cases in which the glands were not taken away recurring and in those cases in which the glands were taken away few recurred; time would show the real or supposed value of removing the glands; and (4) with regard to the mortality of the abdominal operation simplicity of technique and shortened anæsthesia were important. In his hands the mortality had fallen from 15 to 7 per cent. lately. Vaginal hysterectomy was still of value in cases of early cancer of the cervix and in cancer of the body of the uterus, but in more advanced cases of the cervix the abdominal operation was needed as the cancer was more virulent than in the body of the uterus, and the parametric tissues should be removed.

Professor HOWARD KELLY complimented Professor Wertheim on his paper and said that he had, acting with Dr. John G. Clark, recommended the removal of the glands, just as in cancer of the breast. The ureter should not be separated from end to end, as it was supplied by adventitious vessels from the surrounding tissues, as shown by the collaboration with him of Dr. Sampson. He inserted ureteral catheters before operation in order to keep the ureter in touch. He tied the uterine vessels at their origin, always handling the ureter as gently as possible. He approved of the preliminary curettage and used the formalin tampon. He packed off most carefully the wound area from the peritoneal cavity owing to danger of infection from the septic cervix uteri. The mortality of the wide operation was very large and would be so in the hands of men who had not large experience. The public should be educated to come for surgical assistance early in the disease. Cancer was mainly a disease due to unsatisfactory surroundings, just as tuberculous and other diseases were due to insanitary surroundings.

Dr. LOUISA B. ALDRICH-BLAKE (London) complimented Professor Wertheim and Professor Kelly. She gave particulars of 16 cases of her own. After vaginal hysterectomy recurrence occurred in the scar or in its immediate neighbourhood. She had not systematically removed glands and was not yet satisfied of the real value of the proceeding. She had noted glands in the broad ligament and found them always infected with carcinomatous cells. The operation was mainly on the lines detailed in Howard Kelly's "Operative Gynæcology." She made the cervix and vagina as clean as she could and then regarded it as unclean and was very careful to prevent infection of the operation area. She did not curette all cases, but she disinfected the cervix as far as she could, always bearing in mind that the best means at hand were very deficient in results. She had wounded the bladder twice, once wilfully in order to remove growth in its wall and once accidentally.

Dr. SKENE KEITH (London) thought that the Trendelenburg position was undoubtedly the best for the abdominal operation. He did not believe in a very extensive operation as it was more difficult than appeared to a casual observer and should only be done by men of wide experience.

Dr. CUTHBERT LOCKYER (London) had operated on cases in which he had to leave cancerous material in the parametrium and recurrence, of course, took place. The uterus should always be removed when possible. He used drainage of the vaginal vault, which was not closed. He found that cutting instruments tended to cause recurrence and for that reason used the galvano-cautery in removing the uterus.

Dr. MARY SCHARLIEB (London) complimented Professor Wertheim on his valuable paper and said that she had hitherto done mostly vaginal hysterectomy, but now she had taken to the abdominal operation on account of the facilities and advances which it clearly offered. At this section last year she was the only person, with the exception of Dr. Forbes-Ross, who advocated the abdominal operation, which she considered was a more complete, thorough, and workmanlike proceeding and for that reason alone deserved a fair and extended trial.

Dr. JOHN CAMPBELL (Belfast) said that what he had heard had led him to feel somewhat more hopeful. He regretted that many cases were too far gone for the vaginal operation. He trusted that these far-advanced cases would now be attempted by the abdominal route, as clearly Professor Wertheim had made out an excellent case in favour of the abdominal proceeding.

Professor HENRY BRIGGS (Liverpool) gave details of 161 cases. He said that under five years the mortality from recurrence was very high. He did not believe in the efficacy of styptics, douches, &c., but "specimen" gauze should be worn by the patient and thus bleeding would early come under notice. The significance of the fact that the glandular elements dipped down into the musculature of the uterus was such that diagnosis was made more difficult. In this matter adenoma, endometritis, and cancer were very close to one another. He mainly performed the vaginal operation and did not do other than keep an open mind on the matter of the abdominal operation. He had operated on many far-advanced cases purely at the request of the patients and their friends as a last hope and chance.

Dr. F. J. MCCANN (London) did not approve of the idea of issuing pamphlets on cancer to educate the public as it would tend to create anxiety in women and perhaps lead to an increase of cancer by nervous agencies. Great attention to every discharge in a woman should be paid. Cases did come early for discharge but examination was not made by the medical attendant. He thought that a more extended application of the supra-vaginal operation was valuable, and it really had a place and could cause a period of immunity extending over five years. He advocated a free removal of the vagina by the vagina if the vaginal mucous membrane was infected.

Dr. HERBERT SNOW (London) agreed that pamphlets concerning cancer should not be issued to the public. Many cases of hysterectomy for cancer were often cases of tubercle, &c., and the microscope should be always used to confirm diagnosis. He thought that cancer was due to mental distress and worry. He did not believe in radium and high tension electricity in cancer.

Dr. J. INGLIS PARSONS (London) said that the mortality after operation for cancer had in spite of experts gone up and that 23,000 persons in the United Kingdom still died from cancer annually. He always used the cautery in removing carcinomatous tissue as the knife tended to cause spread of the disease. After extensive operations the growth of the

recurrence was more rapid. He had used sodium salicylate in inoperable cases and had reason to think that it did some good based on the idea that the disease was parasitic. Microscopic examinations of the uterine mucosa should always be made before resorting to removal of the uterus

Dr. ROSENWASSER (Cleveland, Ohio) said that he had seen Professor Wertheim's work and had had his doubts concerning the abdominal operation removed. The secret of Professor Wertheim's success was that the patients were prepared for operation for some time before. Professor Wertheim removed the vaginal cervix by the actual cautery whilst yet the woman was conscious and without the aid of an anæsthetic. The abdominal operation only ought to take from one to one and a half hours. He was convinced that the abdominal operation had a great future.

Dr. F. W. FORBES-ROSS (London) said that at this section last year Professor Olshausen had advocated vaginal hysterectomy as being more desirable than abdominal hysterectomy and that Mrs. Scharlieb had entered a strong plea on behalf of the abdominal operation when he (the speaker) had pointed out the facility gained by the abdominal operation for the removal of glands and diseased tissues. Since then Jacobs had addressed the Gynæcological Society in London strongly advocating the abdominal route and now Professor Wertheim had given them a valuable paper embodying his work since 1898. Dr. Forbes-Ross could not agree with some of the speakers that glands need not be removed, they ought to be removed just as much as those (in the axilla and in the neck) enlarged after cancer in the mamma or tongue and lip. The fact that Professor Wertheim found some cases with the parametric tissue, distensible and not infiltrated with lymphocytes but with many cancer cells present and others with no cancer cells but many lymphocytes was most interesting, and although Professor Wertheim had not said so he felt sure that the lymphocytic infiltrated cases were those that did better than the first class.

Dr. MARY THORNE (London) said that she agreed with Professor Wertheim that prolonged anæsthesia was not good for the patient as it caused fatigue and tended to unfavourable results.

The PRESIDENT of the section thought that sufficient praise could not be given to Professor Wertheim for the finest work yet done in operation for cancer. Professor Wertheim had brought every case he had operated on to notice and 30 per cent. were free from cancer after five years. He (the speaker) had removed the uterus per vaginam by the galvano-cautery and preferred it. The facts of the abdominal operation could not be got away from and the paper was an epoch-making one, yet there were other operations which could be done as well as the abdominal operation. It was the greatest paper that had ever been written on cancer of the uterus, or, indeed, on cancer anywhere in the body.

Professor WERTHEIM replied, thanking the meeting for the kind reception given to his work and to his paper and said that when the remarks were published he would reply to them publicly after taking time to consider them.

THURSDAY, JULY 27TH.

The proceedings were opened by an instructive and interesting lantern demonstration by Dr. S. J. CAMERON (Glasgow) on

Some Complications and Degenerations of Fibro-myomata.

Primary carcinoma of the Fallopian tube complicating uterine fibroids.—The growth was situated in the ampullary region of a greatly elongated Fallopian tube, while the uterus contained many fibro-myomata. The growth arose from the anterior wall, having the posterior and superior wall stretched over the tumour but not infiltrated by it. Four inches of unimplicated tube intervened between the tumour and the uterus. The microscopical examination showed the growth to be a carcinoma and the tube wall in the neighbourhood of the tumour showed changes similar to those seen in cases of hydrosalpinx, and these changes, combined with the shape of the tube and the position of an uninvolved ovary situated in its concavity, lead Dr. Cameron to believe that the carcinoma was secondary to a hydrosalpinx. *Sarcoma.*—This tumour was removed by Dr. Cameron from a patient, aged 62 years, who had known of the presence of a uterine tumour for a period of 29 years. The growth was soft and cheese-like, mucilaginous material escaping from a part of the tumour surface when incised. Portions of the growth had a vermilion tint and the blood-vessels in the broad ligament and underlying the peritoneum were of large size. The histological examination showed the growth to be highly cellular, most of the elements having a fusiform shape. A lantern slide from the central portion of the tumour showed fibromyomatous débris infiltrated by these cells. Numerous giant cells were noted. *Carcinoma of the body of the uterus.*—Dr. Cameron had to extend his series to Case 104 before meeting with this complication, although he noted from the reports of other gynæcologists the undoubted tendency that carcinoma of the body had to form in fibro-myomatous uteri. In most of the pathological specimens seen by him the growth had been diffuse, but this he considered was due to the fact that such patients had sought relief when the disease had been present for a considerable time. He referred to the difficulty of distinguishing adeno-carcinoma of the cervix from these cases. Pain he considered to be a fairly early symptom in carcinoma of the body, although there were cases in which the disease had advanced considerably before any marked discomfort occurred. *Change in the uterine and ovarian arteries.*—Frequently great increase in size of those vessels occurred. Endarteritis as a rule was not very severe, while the circular and longitudinal muscular coats were much thickened. The souffle present in cases of fibro-myoma he considered to be situated most commonly in the uterine and ovarian arteries and less frequently in the vessels underlying the peritoneal covering of the tumour. In support of this statement (1) he had in two cases felt pulsation in the large vessels of the broad ligament through the abdominal wall and here the murmur was situated. At operation the broad ligaments were found to be elevated by the tumour growth. (2) With a very moveable tumour the pitch of the note might be altered by changing the position of the growth. (3) It was often best marked in cases where the tumour had undergone cystic change, so that it could not be due to circulation in the tumour. (4) He had noted its presence in a case of ovarian cyst where the pedicle at operation was found to be thick and vascular. *Cystic degeneration.*—He did not consider that this was due to thrombosis of the vessels and pointed out that confusion might arise in designating a fibroid as necrobiotic when the change present might be one of œdema and diffusion of blood pigment. He showed photographs of a fibroid where cystic degeneration had occurred in the capsule proper, and from photographs of museum specimens he showed that probably peripheral calcification of the growth would take place in some instances, and he demonstrated that perforation of the uterine wall might result. The histogenesis and the occurrence of mast and other cells were demonstrated in fibroids undergoing cystic and myxomatous change. *Torsion of the pedicle of a subserous myoma with rotation of the uterus.*—The tumour was removed by Dr. Cameron on the sixth day of illness. It weighed four and a half pounds and the pedicle had been twisted three times, the uterus rotating from right to left so that the right appendage lay to the left of the middle line. A few recent adhesions and a small amount of free fluid were found on opening the abdomen. The tumour was deeply injected but whorling was distinct. Great venous engorgement existed and on microscopical examination the smallest capillaries were found to be dilated, while at parts the vitality of the muscular tissue had been affected. The nuclei in the less affected portions stained deeply but in the parts which had suffered most the nuclei had disappeared. *Chronic torsion of the pedicle with omental adhesion to a calcified tumour.*—The pedicle in this case was long and peripheral calcification with central liquefaction had taken place in the fibroid. The omental adhesion was broad and the tendency to enlargement of the vessels with atrophy of the omental tissues was demonstrated. Such cases might prove dangerous through (1) direct injury to the viscera; (2) strangulation of a portion of the intestine; and (3) rupture of the vessels during the different positions occupied by the uterus during labour. *Fibro-myomatous polyp complicating a three months' pregnancy.*—The patient complained of bleeding of three months' duration. There was no history of amenorrhœa. A fibro-myomatous polyp three inches long occupied the vagina and the day after its removal the patient aborted. Stratified squamous epithelium covered the most dependent portion but along the pedicle the covering was represented by decidual tissue. Between the muscle fibres here and there a group of decidual cells was found. From the examination of this specimen Dr. Cameron concluded that in cases of fibro-myomatous polypi complicating pregnancy the so-called mucous membrane of the polypi might

undergo changes analogous to that in the uterine cavity. *Localized telangiectasis with tuberculous disease of the ovaries and tubes.*—Some parts of this tumour had the structure of an ordinary fibro-myoma but by far the greatest part of it showed a telangiectatic change. Besides this pathological condition well-marked tuberculous lesions were shown to exist in the tubes and ovaries. *Adeno-myoma of the uterus.*—A number of slides were shown to illustrate the pathological peculiarities of this variety of tumour. In one the origin of the tumour from the endometrium was demonstrated and a cervical adenomyoma with marked gastric distension of the spaces was also exhibited. One tumour showed an adenomyomatous structure at one part and an adeno-carcinomatous form at another portion These tumours give rise to excessive haemorrhage and in the experience of others the removal of the ovaries produced no abatement. Most of them could be recognised easily by naked-eye examination as they differed from ordinary fibroids in having no whorling or capsule proper. Uterine fibrosis resembled it, however, but in fibrosis the uterus was smaller and its microscopical characters were entirely different.

Mr. E. HASTINGS TWEEDY (Master of the Rotunda Hospital, Dublin) next read a paper entitled

The High Range of Normal Temperature and Pulse throughout the Puerperium.

In the course of this paper he pointed out that success in obstetrical practice as it existed in the large maternity hospital or in the district of the private practitioner was more accurately gauged by a low percentage of morbid cases than by any septic mortality table In pre-antiseptic times men practised midwifery for long periods with an entire freedom from septic mortality and these periods of immunity extended also to the maternity institutions. Thus, in 1766, 611 women were delivered within the walls of the Rotunda Hospital with a maternal mortality from all causes of three and statistics based on a death-rate alone would make many years in the eighteenth century compare favourably with present-day figures. This in spite of the fact that maternity patients were often placed two in each bed and that contaminated water and a foul cesspool supplied the wants of the hospital. It was certain, however, that these ancient statistics gave us no indication of the true state of affairs in respect to sepsis as indicated by a morbid pulse and temperature. Some temperature charts of the year 1880 were still in existence and a reference to the ward books of this period proved conclusively that the hospital was in a more than usually healthy condition at the time. Carbolic acid and Condy's fluid were in general use and the hygienic condition of the institution had markedly improved. On analysing these charts it was found that just one-half showed morbidity (48 out of a total of 99), the temperature in nine of these 48 cases reached up to or above 105° F. and 18 more up to or above 103°, whilst amongst those cases which were recorded as normal such notes as the following frequently occurred:—Chill, erysipelatous patch over buttocks. Succession of chills, headache. Chills, lochia foetid and scanty. Series of chills, face flushed, lochia very foetid and scanty, &c. In spite of these indications of unhealthiness the period was singularly free from maternal mortality and if figures prove anything these prove that the majority of women will pass through the child-bearing ordeal notwithstanding their septic condition, although their constitutions would inevitably bear unmistakeable indications of the ravages of this dread disease. He contrasted these figures with his present-day statistics which showed for the six months ending April 30th, 1905, that amongst 918 women delivered in the hospital there were 58 cases recorded as morbid. An analysis, moreover, of these 58 cases showed his results to be still more favourable than the bald statement of these figures would lead them to believe. In 48 instances the temperature and pulse did not remain above the normal for longer than four days; in five more for longer than five days; none of the cases proved fatal or gave rise to any anxiety; and the longest recorded rise of temperature, due to acute Bright's disease, lasted but 21 days. Considering, then, the importance of this subject, Mr. Hastings Tweedy urged that a common basis for determining morbidity should be arrived at by the heads of the maternity hospitals throughout the British Empire as well as by private practitioners. His present method for determining this had worked with smoothness and absolute accuracy throughout the year. It was based on an estimation of the pulse and temperature for 24 hours counting from the beginning of the second day of the puerperium. A temperature above 99° accompanied by a pulse above 90 indicated a morbid state if recorded on three successive occasions. His charts were arranged so as to make these two records apparent at a passing glance and it was certain that a serious condition of septic ill-health would be detected with absolute certainty by these records. He concluded by expressing a hope that others would adopt these limits and thus enable the statistics of the British Empire to harmonise.

Professor J. W. BYERS (Belfast) thought that there should be a standard to guide them as to puerperal sepsis—that is, when they should apprehend its onset—the standard being a temperature of 99° F. and a pulse of 90. In operative midwifery, if extreme care was not taken, evidences of sepsis would arise.

Dr. HENRY CORBY (Cork) said that the pulse and the temperature should be taken and read together, and that the pulse was the more important of the two, especially in peritonitis, puerperal or otherwise. They were, perhaps, too strict in keeping patients lying down too long; of course, the liability to pulmonary embolism and prolapsus uteri, &c., should be borne in mind. Of great value was the getting up of a woman as soon as possible after it was safe, thus facilitating drainage, &c.

Dr. R. C. BUIST (Dundee) said that a standard should be fixed and used as a guide in lying-in hospitals and elsewhere.

Dr. R. BOXALL (London) also agreed that some standard should be adopted.

The following motion was proposed by Dr. BUIST and seconded by Professor BYERS:—

That it is desirable that a standard of puerperal morbidity be arranged for lying-in hospitals and that the Council be requested to appoint a subcommittee to consider the matter.

Dr. THOMAS WILSON (Birmingham) did not think that the Association was the body to set up a standard but that the obstetrical societies of England, Scotland, and Ireland should be the bodies to do this.

Dr. FORBES-ROSS (London) agreed with Dr. Wilson in his remarks.

Dr H. C. TAYLOR YOUNG (Sydney, New South Wales) did not agree and did not see why the Association should not carry out the terms of the proposition submitted.

The PRESIDENT of the section then put the proposition to the section which was carried *nemine contradicente*.

Dr. WILSON then read a paper entitled

Two Cases of Vaginal Cæsarean Section in the last Two Months of Pregnancy, with Especial Reference to Vaginal Cæsarean Section.

He stated that in the last two months the uterus with its contents was so large that until recently it had been considered impossible to remove it through the vagina, but Dührssen's method had cleared away this difficulty and it was now possible to operate through the vagina even at the full term of pregnancy. In the last months of pregnancy in association with operable cancer of the cervix there was now, therefore, a choice of three methods of hysterectomy—abdominal, vaginal, and combined. The relative advantages of these methods were discussed and reasons were given for preferring the vaginal route. Two cases were related in which operation at the eighth month was performed successfully as regards both mothers and children. In conclusion, Dr. Wilson pointed out that the choice of operation in pregnancy would depend upon the method generally adopted by the operator in cases of cervical cancer. Even in the last months the operation of vaginal Cæsarean section was not a difficult one in suitable cases. The ultimate choice of operation in these cases would depend upon the remote results as regarded recurrence of cancer and until time had enabled these to be estimated and compared the question of the best method of operating, abdominal or vaginal, must remain an open one.

Professor WERTHEIM said that he had operated on six cases. In each case the ordinary abdominal Cæsarean section was performed and then the uterus and parametric tissues were removed. All the cases did well and recovered, which was really satisfactory as cancer complicating pregnancy was particularly virulent.

The PRESIDENT of the section said that Dr. Wilson's paper was one of very great value. There did not appear to be any very considerable difficulty in doing the operation. If, however, the patients died from recurrence soon after it, and lived

longer if delivered naturally without removal of the uterus, Professor Wertheim's cases showed that perhaps the abdominal operation would in the future turn out to be the proper operation. He thought that, if possible, the uterus should be allowed to dilate. There were disadvantages of this, however, such as rupture of the uterus. After the puerperium, in which he had seen a cancer become much smaller, perhaps Professor Wertheim's operation could then be more safely and more radically done.

Dr. WILSON replied and said that the cancer might advance during the puerperium.

The PRESIDENT of the section said that his experience was that the cancer retrogressed during the puerperium.

Dr. CAMPBELL then read a paper entitled—

The Influence of the Presence of Pus in the Female Urethra on the Progress of Gynæcological and Obstetrical Cases.

He said that the general practitioner should realize how prevalent pus in the urethra was, both among gynæcological and parturient patients; how frequently that pus contained virulent septic micro-organisms; and how readily it might be the cause of chronic gynæcological ailments and of puerperal septic conditions. In 544 consecutive cases examined in private practice 135 had pus in the urethra or in Skene's glands—i.e., 24·7 per cent. In 372 consecutively examined in hospital practice 135, or 36·2 per cent., had pus in the urethra or Skene's glands. The result of this examination was that in the total 916 cases 29·4 per cent. had pus in the urethra or Skene's glands. In 120 labour cases examined specially for him by Dr. John McLiesh, 18 of them, or 15 per cent. had pus in the urethra and Skene's glands. In 100 cases of pus in the urethra or Skene's glands Dr. T. Carnwath had found staphylococcus pyogenes albus in 96 per cent., streptococci in 6 per cent., and gonococci in 2 per cent. Many of the cases showed mixed infections—a patient with pus in her urethra was practically in the position of a woman with a septic sinus discharging into her vagina and required special precautions during her confinement.

Dr. WILSON said that he had for years attended to, and thought very deeply on, the question of the clinical significance of the presence of pus in the female urethra. He considered that the clinical explanation was the same as that in the case of the male gleet. He was of opinion that experts should be more often on the look-out for pus in this connexion.

Dr. BOXALL said that at the General Lying-in Hospital, York-road, London, these cases did not occur, but at the Queen's Charlotte's Hospital in London, where every case was not treated as possibly septic and mercurial douches were not used before delivery, perhaps that was the reason why septic gonorrhœal cases sometimes arose. This was the explanation which he gave when asked by the staff of Queen Charlotte's Hospital to explain the absence at York-road of septic cases which occasionally arose at the Queen Charlotte's Hospital. Those cases were perhaps cases with pus in the female urethra.

Dr. CORBY read the account of a case entitled,

Case of Fibroid of the Ovary from a Hermaphrodite,

with photographs, which was very interesting and instructive.

OPHTHALMOLOGY.

WEDNESDAY, JULY 26TH.

Mr. GEORGE A. BERRY (Edinburgh), the President of the section, after welcoming the members, said: Fifty years ago such rapid strides were made in the science of ophthalmology and in ocular therapeutics that every year brought its record of important discoveries in diagnosis, of new methods of examination, of far-reaching generalisations, often of real advances in ophthalmic surgery. At that time, indeed, a few years sufficed to revolutionise the whole science of this department of medicine until ophthalmology attained to a degree of perfection which led von Helmholtz to say of it that it was "the most strictly scientific department of medicine, the one which most nearly approached to the exact sciences." That ophthalmology can hardly with the same justice be said to occupy so prominent a position at the present day is due to the rapid advances which have been made more recently in other departments of surgery. Some few advances in our special science are, no doubt, of comparatively recent date—e.g., the introduction of antiseptic and aseptic measures in connexion with injuries and operations; the use of cocaine as a local anæsthetic; the appreciation of the rôle played by microbes and the toxins which they engender in connexion with various inflammations of the eye; some few points in pathology, notably with reference to tuberculous manifestations; the use of the electro-magnet for the removal of particles of iron and steel, and the application of the Roentgen rays for their detection and localisation. From the therapeutic point of view, however, there has been but little advance to record; whilst our knowledge of the connexion between diseases of the eye and diseases of other parts of the body is hardly less crude than it was 50 years ago, except perhaps as regards ocular manifestations in certain nerve disorders. Latterly, indeed, instead of leading the way the ophthalmic surgeon has mostly had to follow and to adapt to the requirements of his own specialty the advances, so far as they are at all applicable, which have extended the sphere of general surgery. This comparatively slow advance of recent years is not due to there being nothing left to find out. It is not due to the interest in the special subject of ophthalmology being, for the time, diverted to branches which seem to offer more scope for research. There is at least no dearth of writings on special ophthalmological topics. It is not due to the absence of experimentation with new therapeutic agents; new drugs are constantly appearing which, if they do not succeed in doing a tithe of what is claimed for them, at least raise hopes for the time being. Not a few books devoted exclusively to the consideration of new remedies have appeared quite recently. Even in connexion with diseases of the eye, however, for which it should be possible to estimate the results of treatment, in many cases at least, more fully than for other less accessible organs, there is so often shown the same absence of critical insight into the difficulties of such investigation which seems to characterise the majority of writers on therapeutics. Notwithstanding discoveries in pathology, we make, it must be admitted, but slow progress in treatment. The problems which for us await solution are in point of fact numerous enough but they are for the most part such as seem only likely to be solved when our knowledge of general pathology and medicine has reached a stage or two further than it has at present. We do not even know yet what it is that determines the selection of certain organs and tissues for the manifestation of certain definite pathological processes. We are consequently and necessarily empirics as regards the manner in which we may try to supplement purely local by more general means of treatment. But if we cannot to-day check the progress of an optic atrophy or treat on anything but empirical lines a choroiditis, if we cannot prevent the development of a detached retina, if we cannot even cure a conjunctivitis, we may surely hope that some day it will be possible to do all these things and more. If our progress is slow it is none the less real. We need to be critical, even sceptical, in view of the flood of literature from which we must separate the chaff from the wheat. But we can afford to be, we have reason to be, optimistic as to the future. My own predilections have always been for surgery. There is so much pleasurable interest to be got from watching the effect of surgical interference of any kind, so little satisfaction in cases which reliance has to be placed on medical treatment alone, that we are prone to forget that the laborious, patient investigations of recent times may, in the perhaps not distant future, turn the tables on surgery. We may some day have to admit that many conditions, for which surgical measures seem the only suitable ones at present, will allow of rational successful treatment on medical lines alone. Much of our treatment at the present time may even in the light of future knowledge be of a nature which, if it were then adopted, would be little less than criminal. The present discussions might not perhaps lead to much, yet they sometimes help to lift us out of the groove of self-satisfaction and to correct a tendency inherent in man to think that the only "sensible" men are those who hold the same views as ourselves.

Dr. ADOLPH BRONNER (Bradford) read notes of

A Case of Slight Myopia

in which distressing local and general symptoms were relieved by the use of glasses which were much too strong. He said that recently much attention had been drawn to the use of correcting glasses for the relief of obscure nervous symptoms. In America "heterophoria" and in this country

"errors of refraction" were the presumed causes of the trouble. The case he detailed illustrated well the dangers of accepting some of the marvels published without proper investigation. A young man suffered from headache on reading, his position at work was bad, and he stooped greatly. He obtained glasses which compelled him to sit upright and his symptoms disappeared and his general health was improved. Examination of the eyes showed that he was emmetropic. The glasses worn were concave sphero-cylinders which appreciably diminished his vision both near and far, but by reason of the former effect they compelled him to sit up when reading. Original examination of the case by a competent observer would have shown the true nature of the disability and the cure would have been natural and easy.

Mr. E. E. HENDERSON (London) read a paper on

The Influence of the Size of the Pupil as Produced by Atropine or Eserine on the Circulation of Intraocular Fluids.

After describing the apparatus which he and Professor Starling used in this research he said that their experiments showed that the raising of the pressure of the living eye artificially increased the rate of filtration. This depended upon several factors: one that had not previously been taken into account was the condition of the pupil as affected by atropine or eserine. The rate of filtration was always greater at artificially raised pressures when eserine was used than when atropine was instilled. These effects, he thought, were not merely mechanical since they differed from the results obtained by similar experimentation with dead eyes.

Mr. N. BISHOP HARMAN (London) read a paper detailing his experiences with various forms of

Electrical Treatment of Trachoma at the Middlesex Hospital.

They had there an unrivalled equipment and no pains had been spared by Mr. C. R. C. Lyster, the surgeon in charge, and his staff. Seven cases had been treated by the high-frequency current by direct contact of the electrode to the affected mucosa; in some cases the applications had numbered over 80. By the x rays four cases had been treated; in each case a current of such quality was used as would give the maximum of the x rays without the dangerous burn rays; up to 50 sittings of ten minutes each had been given. With radium two cases had been treated by direct contact of the glass capsule containing the salt; the applications in one case numbered 139. Despite all this labour and care no beneficial results had been obtained; in every case in which the particular treatment was persevered with steady deterioration was noted, and in two cases of an original unilateral affection the second eye of each case became seriously affected whilst the x rays were being exhibited. His conclusion was expressed by his return to the use of silver solutions, the use of the bluestone crayon, expression, and scraping.

Mr. C. DEVEREUX MARSHALL (London) had used both the x rays and radium; in each case treated he had used the bluestone crayon on the other eye by way of control. He was not convinced that the new forms of procedure were of any use; they were certainly not so effective or so rapid as was bluestone.

Mr. CYRIL H. WALKER (Bristol) asked whether relief of the pain of trachoma could be obtained by the x rays and what use could be made of the low tension tube.

The PRESIDENT of the section had seen radium in use for the treatment of lupus in Paris; it was strapped on to the affected part for four hours and not for five or ten minutes as practised by Mr. Harman.

Colonel E. F. DRAKE-BROCKMAN (London) referred to his Indian experiences of the treatment of the disease. He thought the use of bluestone severe and preferred silver solutions, particularly the new colloidal preparations.

Mr. BISHOP HARMAN, in reply, said he did not find that the use of the x rays relieved the pain of trachoma; he would not use low tension tubes on account of the serious risks which they entailed of burns. As regards the length of time of the application of radium that depended on the quantity used and the sensibility of the part to which it was applied. He agreed that the use of bluestone might be cruelly rough but because it was sometimes badly used that did not diminish its value in careful hands. He did not place much value upon the new colloidal preparations.

Mr. BISHOP HARMAN also read a paper on

False Hay Fever.

He said it was not often that cases of hay fever came the way of the ophthalmic surgeon, they were almost wholly the monopoly of the surgeon who specialised on the respiratory tract and not a few were gold-mines to the quack. He did not propose any new and infallible panacea for the hardy annual of hay fever—the title of his paper clearly told that. He had observed several cases which had been diagnosed and treated as hay fever and which he had been able to relieve by a very simple procedure, just the relief of the exaggeration of an ordinary physiological reflex. Notes of one case would suffice. A woman, aged 30 years, born and bred in the Midlands, of high intelligence and engaged in responsible work, moved to a southern seaside resort well known for its pine woods. Until this time she had enjoyed excellent health and suffered no other than occasional simple "colds." The spring following her removal she had violent and recurrent attacks of coryza lasting ten days; next spring the attacks lasted a month and on the third year they increased in severity and lasted two months. Her physician diagnosed "hay" or "pine fever" but treatment, even the use of adrenalin, did no more than temporarily allay the severity of the attacks. The patient allowed that nearness to hay or pines did not annoy her but that bright sunlight was distressing, especially to the right eye; relief was best obtained by shutting herself in a room with the windows shut and darkened. Mr. Bishop Harman had the advantage of having seen most of the members of her family; all had astigmatic eyes. The suggestion that her eyes might be at fault was flouted. Later Mr. Bishop Harman examined her. The nose and the throat were healthy but the vision was defective. R.V. $= \frac{6}{9}$, with + 3 D. sphere and − 2 D. cyl. ax. 15 $\phi = \frac{6}{5}$. L.V. $= \frac{6}{9}$ nearly, with + 0 75 D. sphere and 1 D. cyl. ax. $\ominus = \frac{6}{5}$. It was now three years since these glasses were ordered and there had been no renewal of the attacks during this period, yet no other treatment than the wearing of the glasses had been attempted. The rationale of these cases of "false hay fever" was perfectly easy of comprehension. Reflex irritation of the fifth cranial nerve area from irregular stimulation of the optic nerve formed one of the stock illustrations of "reflexes" in every text-book of physiology. Sneezing was readily excited by sudden exposure to bright sunlight. In these cases the irritating effects of brilliant light were exaggerated by an error of refraction, particularly by an anisometropia. Experimentally Mr. Bishop Harman was able to produce attacks not unlike those described by the wearing of incorrect spectacle lenses. "Cures" for "hay fever" had gained such an ill reputation, chiefly though an ill-regulated empiricism, and the cure of all ills by "spectacles" had recently been so vigorously exploited, that he almost hesitated to join these two—hay fever and spectacles—in matrimony. But the association of retinal reflexes with fifth cranial nerve irritation was so certain that he thought he might be pardoned if he asserted that the physician who failed to submit the eyes of a sufferer from "hay fever" to expert examination had not only not exhausted all the possibilities of treatment but failed to exclude one of the first causes of trigeminal irritation.

Mr. DEVEREUX MARSHALL asked, If such cases occurred in the spring from light reflexes, why did they not also occur in August and September when the sunshine was as bright?

Dr. BRONNER suggested that the cases which Mr. Bishop Harman had described were what was known as "vaso-motor rhinitis," chiefly found in neurotic women, and which best reacted to general treatment.

The PRESIDENT of the section said that he did not believe in the reflex from the retina, so that unless evidence could be brought to prove that the case was weak.

Mr. BISHOP HARMAN, in reply, said that the cases were most frequent in the spring, for then by contrast the sunlight was most irritating; later, usage and the greater protection of trees reduced the stimulus. The cases were very aptly described "vaso-motor" by Dr. Bronner, that was just what he meant by a reflex effect. As to the President's objection to his use of a retinal reflex to explain the sneezing he thought that all physiologists were agreed on that point and the existence of retinal reflexes was demonstrated by the mobility of the pupil.

Professor HESS (Würzburg) demonstrated by a series of beautiful drawings the

Pigmentary Migration in the Retinæ of Cephalopods under the Influence of Light.

He had found in these eyes the presence of visual purple, a fact not admitted until now of any invertebrate. He proved

that all cephalopods studied by him showed this pigmentary migration within the retina, but the rapidity of the migration differed in various species, and it was different in different parts of the same retina, especially in the small horizontal stripe which contained very long and small rods, and corresponded evidently to a stripe of best vision. He also related some experiments on the same subject performed on monkeys' eyes.

Dr. F. W. EDRIDGE-GREEN (London) expressed his pleasure at the findings of Professor Hess's work. He had added to the list of these creatures possessing visual purple another group which at one time were confidently asserted to be devoid of it; the same had been recently proved for the common bat.

Dr. KARL A. GROSSMANN (Liverpool) read notes of a case of

Congenital Absence of the Dilatator Muscle of the Pupil.

A girl, five years of age, of normal general physique, was noted to present markedly eccentric pupils. They were placed upwards and inwards, were of oval shape, and were slightly ragged in the margin. The surface of the iris showed a number of coarse parallel folds. The whole iris was tremulous on quick movements of the globe and the lens was found to be absent or represented only by an opaque mass in the vitreous. Instillation of eserine demonstrated the presence of a sphincter muscle by contraction but atropine affected the pupil little if at all. The condition, he thought, illustrated the interdependence of the development of lens and dilator muscle.

Dr. GROSSMANN showed a small form of

Hollander's Modification of Paquelin's Cautery

which he used in conical cornea. Through the platinum end of the instrument there was fitted a fine platinum worm-like tube; through this was pumped air which was raised to so high a temperature that it formed a most efficient and delicate drying application to these thin and bulged cornea.

Dr. GROSSMANN further showed numerous and very fine lantern colour photography transparencies of cases of Lepra Ophthalmica which he had examined in Iceland.

Dr. CECIL E. SHAW (Belfast) read notes on a case of

Toxic Amblyopia following Influenza.

A man, aged 20 years, of good history, suffered from a mild attack of influenza in February last. A week later the vision was affected and when seen fingers could only be counted with the right eye at one foot, and there was no perception of light in the left eye. The pupils were dilated but the fundus was normal in each eye. The sense of smell was temporarily lost. By the second week vision was further diminished and there was numbness in the right arm, leg, and side, and walking was difficult. Paresis also appeared in the left internal rectus with a divergent squint. In March there was a slight improvement which increased until in June he was healthy again in body but the vision remained defective—right vision being only $\frac{1}{24}$ and left vision $\frac{1}{5}$. There were no changes in the fundus.

Mr. BISHOP HARMAN said that he had two cases under observation of somewhat similar nature. Both were schoolboys of healthy physique and family. One recovered from an attack of influenza with permanent loss of central vision which necessitated his being trained in a blind school. The other was seen and put to bed at the very outset of the attack; there was a marked degree of choke-disc and vision was lost but in the course of a month vision recovered to $\frac{6}{9}$ in one eye and $\frac{6}{12}$ partly in the other.

THURSDAY, JULY 27TH.

Mr. W. H. H. JESSOP (London) opened a discussion on

Intra-ocular Tuberculosis.

He limited the subject to disease of the interior of the eyeball and therefore included cases affecting the choroid, iris, ciliary body, and retina; the chief part was devoted to the choroid—including miliary tubercle of the choroid and solitary choroidal tubercle. Of solitary choroidal tubercle an analytical table of 20 cases was given collected from various authors. Statistics were collected as to patients' sex, age, previous history, family history, clinical tuberculous signs in other organs, operation, results, and macroscopic and microscopic examination. A solitary tubercle was found generally as a rounded spherical body of grey, white, yellowish and different coloured greys starting from near the optic disc and was subretinal, seldom tending to infiltrate the retina, the retinal vessels lying clearly over it. There were generally nodules to be seen on it and often it seemed made up of nodules. The retina around might be flecked with spots like diabetic retinitis but not pigmented; the tumour was subretinal for a very long time. Yellowish spots might be seen on the surface of the tumour like lichen and were caseation changes. Hæmorrhages might occur but were not often recorded. In miliary tuberculous choroiditis tuberculous meningitis was nearly always present. At St. Bartholomew's Hospital, in 15 cases of tubercle of the choroid found in the post-mortem room 14 had tuberculous meningitis and only one had not. This case had miliary tubercle of the lungs, the peritoneum, the kidneys, the spleen, &c. He was sure that the two very frequently coexisted and it was not a fact, as stated by Horner, that the presence of tubercles in the pia mater contra-indicated their presence in the choroid. Tubercle of the iris and ciliary body were next treated of and also the rare condition of tubercle of the retina. As to diagnosis in tuberculous cases the greatest test was certainly inoculation experiments. In many cases, especially when caseation had taken place, the bacillus was not to be found. Giant cells, tuberculous stroma, endothelial cells, and caseation were all of minor importance in diagnosis. Other signs of tubercle in the body helped the diagnosis. In order to limit the discussion the following questions to be answered were suggested as the basis of discussion: 1. The relative frequency of primary intra-ocular tuberculosis. 2. How often was choroiditis met with in acute miliary tuberculosis? 3. What was the value of tuberculin—(*a*) as an aid to diagnosis; and (*b*) as treatment? 4. What was the danger of dissemination as a result of excision in intra ocular tuberculosis? 5. In tuberculous affection limited to the choroid was there little tendency to pigmentation or scarring of the retina or choroid and were vitreous opacities seldom present? 6. How often in chronic tuberculosis, especially pulmonary, were there choroidal lesions? 7. In chronic choroidal tubercle what were the signs of "obsolescent tubercle"? On these points his own opinion was as follows: 1. He had never come across a case which he could prove to be primary intra-ocular tuberculosis and doubted whether such a condition ever existed. 2. From statistics the percentages varied greatly but probably it was to be found in about 50 per cent. post mortem and in from 30 to 35 per cent. by the ophthalmoscope before death. 3. In his own practice he had personally had little experience but was certain that the old tuberculin was not trustworthy and often did much harm. From the excellent results of von Hippel and Schieck in tuberculin T.R. he should certainly try it on every doubtful case as a means of diagnosis and in every case as to treatment. It was necessary to watch very carefully the temperature of the patient, which should be taken night and morning. The largest dose at start ought not to be greater than $\frac{1}{10000}$th milligramme, gradually increased to one milligramme dose. 4. Excision in intra-orbital tuberculous condition of the eye should, in his opinion, be seldom done unless there was a great deal of pain or the condition was actually telling on the patient's health. As the condition was not primary it only removed one focus of the disease and the experiences set forth by Rogman seemed conclusive as to the danger. This was apparently much increased if the sclerotic was involved. Out of 11 cases of death after excising a tuberculous eye no less than eight died within two months from tuberculous meningitis, a great contrast to Schieck's 13 cases treated with tuberculin in which all were cured and no eye was lost. 5. In miliary tubercle of the choroid he had never seen vitreous opacities, neither were they present in his two cases of chronic choroidal tubercle. In these two cases also, which were the only ones he knew certainly cured, after severe tuberculous choroidal trouble the chief characteristic was the little apparent change in the part of the fundus in which the tubercle existed; in another case the absence of any pathological pigmentation and in a further case the slight amount of pigmentation even in the neighbourhood of the greatest lesion were striking. 6. In cases at St. Bartholomew's Hospital of chronic pulmonary tuberculosis he could find no note of chronic choroidal change. Dr. George Carpenter and Mrs. Stephenson found in 119 cases of chronic tuberculosis in children choroidal changes in 11, or 9·24 per cent. These authors arranged them into four groups: (1) solitary; (2) multiple; (3) disseminated; and (4) diffused. 7. As to this point his own two cases were the

only ones he had to go on in which tuberculous inoculation experiments made the diagnosis of the cases certain, and in these after the lapse of four years the so-called "obsolescent" changes could be seen. The changes were not in the macular region but started near the disc, as most of the 20 cases detailed also did. The absence of much scarring and absence of pigmentation seemed to distinguish the cases from the syphilitic type.

On the utility of tuberculin injections, either for diagnosis or with a view to treatment, Professor HESS said he had injected the old preparations 18 times and the new "T.R." eight times, for diagnostic purposes only. In half the cases he obtained a general reaction but in only two—cases of iritis—was there a local reaction. He only considered a local reaction exact proof of the nature of the inflammation, yet the fact that the general reactions in these two cases were similar to the reaction obtained in the other cases lent an air of probability to there being ocular tuberculosis in these also.

Dr. J. HERN (Darlington) had used the injection in six cases, using only the new "T.R." He thought it a valuable aid to diagnosis but not for treatment. A good reaction certified the presence of tubercle in the body, but its absence was not a sure contra-indication.

On the danger of excising tuberculous eyes Dr. J. TATHAM THOMPSON (Cardiff) said he excised such an eye once for the relief of severe pain but death from meningitis ensued in a few weeks.

Mr. JESSOP had operated on two cases and in each fatal meningitis followed in three weeks.

Professor HESS thought it well to wait as long as possible, not only because of the risk of general infection but because, as Mr. Jessop had shown, even very severe cases made fair recoveries in time.

Dr. SHAW said he had seen one case of apparently primary tubercle of the eye in a boy, aged nine years. The growth appeared on the iris of the left eye and increased so rapidly that the eye was excised. Before enucleation some retinitis was seen in the right eye. A month after the operation signs of meningitis appeared but subsided. During the next two years the boy suffered from tuberculous abscesses and bone affections on the left side of the arm and the leg. Pathological examination of the enucleated eye showed typical tuberculous growth.

Mr. J. HERBERT PARSONS (London) said that the trend of opinion amongst many continental observers was that a real primary onset of the disease did occur in the eye.

Mr. W. M. BEAUMONT (Bath) cited the case of a girl, aged ten years, under his care where an apparently simple phlyctenular affection of the cornea relapsed, became chronic, was succeeded by iritis in one eye and retinitis in the other, and last of all by a typically tuberculous affection of the cervical glands. It appeared very likely that this was a case of true primary disease of the eye.

On the point raised by Mr. Jessop—the frequency of choroidal infection in chronic surgical and medical tuberculous disease—Sir VICTOR HORSLEY (London) said it was a point of considerable importance if chronic tubercle could be determined by examination of the fundus. Was it possible that the appearances of the fundus in tuberculous disease could be distinguished from the appearances presented in cerebral tumour?

Professor HESS said that such a differentiation was not possible by the aid of inspection alone but with the aid of tuberculin it might be. In a case of the kind the injection of tuberculin was followed by a local reaction and by the exaggeration of inflammatory changes about the original disease, and this was considered evidence of the tuberculous character of the original process.

Mr. HERBERT PARSONS raised the question as to the greater liability to permanent pigmentary changes in tuberculous affections as compared with the effects of congenital syphilis. Mr. Jessop had expressed his opinion that pigmentation was rare after tuberculous disease.

Mr. BISHOP HARMAN said that from his experience of the blind and partially blind children in London County Council schools, he was distinctly inclined to think that pigmentation was much more associated with choroiditis the result of congenital syphilis than with any other disease of children. He based this opinion on the ease with which a series could be found from the least degree of pigmentation to the grossest, and associated in many cases with the typical stigmata of congenital syphilis.

Mr. JESSOP replied, agreeing as to the dangers of setting up general tuberculosis by excising an affected eye and emphasising the danger to the body generally when the sclera was affected.

Dr. HERN read a paper entitled

Some Observations on the Effect of the Presence of Adenoids in the Naso-pharynx on some Affections of the Eyes.

Soon after Meyer of Copenhagen read his paper before the International Medical Congress in London in 1881 and the facial and other indications of adenoids became familiar, he noticed that cases of phlyctenular, eczematous, or scrofulous conjunctivitis or ophthalmia frequently presented the adenoid facies; and that unless the throat condition was treated satisfactorily the treatment of the eye conditions was most unsatisfactory. These observations referred in the main to children but similar eye affections were found in adults associated with rhinitis and hypertrophied turbinal bones. He did not think that the association pointed to a common strumous or tuberculous origin for these conditions; many cases showed no such family taint. Some, it is true, did ultimately succumb to tubercle, but he thought the conditions he had mentioned favoured this ending only in so far as they induced debility by continued irritation and by preventing respiration. And similarly he thought that the eye conditions were indications of the onset of this debility arising from these same causes.

Mr. A. H. BENSON (Dublin) read a paper on

The Evolution of the Operation of Blepharoplasty.

The operation was for the relief of entropion consequent on neglect of trachoma. Very many operations had been devised, a few were satisfactory, and more were injurious. He did not intend to introduce any new operation but to trace the stages whereby they had arrived at a procedure which in their hands in Dublin had been satisfactorily followed for 20 years. The first attempt at remedying the hurt of entropion was both drastic and disastrous; the surgeon removed with scissors the lid margin with all its accessories, permanent shortening of the lid with exposure of the eye followed, and xerophthalmia was grievously common. Next the follicles of the offending cilia were removed and the other marginal structures spared; this was a step in the right direction. Later efforts were directed to saving the cilia either by cutting into the deformed tarsus, straightening the lid and allowing the gap to granulate up, or else by the removal of part of the skin of the lid so as to drag up the displaced cilia; these procedures both involved loss of substance and so were defective. Next succeeded transplantation of the hairs and replacement by a strip of skin, with the resulting disadvantage that the downy hair of the skin was brought into apposition with the cornea and produced a new and no less chronic irritation. Their present method was to incise the whole length of the margin of the lid behind the line of cilia to the depth of a quarter of an inch and to place in the gap formed between the front and back layer of the lid a strip of mucous membrane excised from the lip. The procedure was at once simple and rapid of execution and the most trustworthy in its final effects—in fact, it cured the entropion.

Professor HESS, Dr. R. W. W. HENRY (Leicester), and Dr. TATHAM THOMPSON agreed that the method advocated so eloquently by Mr. Benson was all that he claimed for it; they had used it for long periods.

The PRESIDENT of the section remarked that the only true test of such operations was that of time; they must strive for the most permanent relief possible.

Mr. BENSON considered that experience proved that if the method he advocated showed a good result a fortnight after its performance the good result would be permanent.

Dr. SHAW said that he had often seen his predecessor, the late Dr. W. A. McKeown, transplant skin from behind the ear with much success.

Mr. J. B. LAWFORD (London) agreed in the excellence of the operation but considered that there were some gross cases of malformation which could not be met by it.

The PRESIDENT of the section showed a

New Vision Test,

with which he had been experimenting for some time, for the detection of fine differences in visual acuity. On a large disc were mounted a series of smaller discs; these were printed in chequers of black and white squares. The squares were in such gradations of sizes that they subtended the same angles as the different sized letters in Snellen's types.

In practice it was his habit to ascertain the smallest disc of chequers which could be distinguished as such at a given distance. By way of control grey discs were intermingled with the chequered discs. By altering the positions of the lines of the chequers it was possible to ascertain the axis of an astigmatism very readily and he found that children would more readily respond to this mode of subjective test of visual acuity than when Snellen's "E" test was employed.

Mr. BEAUMONT said that the test seemed to meet some of the difficulties found in using the ordinary test types.

PSYCHOLOGICAL MEDICINE.

WEDNESDAY, JULY 26TH.

The Presidential Address was delivered by Dr. ALEXANDER R. URQUHART, medical superintendent of Murray's Royal Asylum, Scotland, on

The Clinical Study of the Heredity of Insanity.

The proper adjustment of organism to environment was, he remarked, a necessity whereby only life could be lived and progress made possible. Statistical facts and data were, when carefully collected, the foundation of nearly all their knowledge of heredity. This was the Galtonian method, now developed in the special direction of "biometric" study by various investigators. The breeding of animals, the culture of plants, and man's own experience of health and disease in families constituted a body of knowledge extending for centuries into the past and at present classified and collated by various workers, so that it had added largely to the scientific knowledge of heredity. The special heredity of mental disease had been paid attention to in the classical work of Morel of Belgium (1858) and Thurnam of York about the same period. Since then memoirs had been published by Dr. Grainger Stewart (1876), Dr. G. H. Savage (1877), Dr. W. F. Farquharson of the Westmorland Asylum (1898), and by many French and German alienists. The figures given by various authorities as to the prevalence of heredity as a factor in insanity were in fair accord, the observations made showing that from 45 to 50 per cent. of all cases of insanity were of predominantly hereditary origin. This was a conservative estimate, for some authors had traced a hereditary origin in 60 per cent. or more of cases admitted to the asylums of large cities. Various psychoses, apart from, and not amounting to, insanity, were met with in abundance in the families of the patients, whether among the parents, uncles and aunts, or among the brothers and sisters. Dr. Urquhart showed a large number of coloured diagrams in which, in the form of genealogical tables, these facts relating to insanity on the one hand and the various family neuroses and psychoses on the other were graphically demonstrated. A tuberculous ancestry was, he said, fairly common in insanity, especially in cases of idiocy, imbecility, and the feeble-minded forms of the "degenerative" insanities. The heredity of syphilis was hard to discover and difficult to trace. A drug-craving heredity, as, for example, morphinism or cocainism of the parents, was rarely found. A cancerous heredity, in the absence of neuroses and psychoses, was definitely traced in a moderately small number of cases. As the result of 25 years' observation on 1104 cases admitted to the asylum it was found that hereditary predisposition in the line of ancestry was very marked in nearly 50 per cent and that a large proportion—about 70 per cent.—had insane relatives not in the direct line of the patient but collaterally related to him closely (brothers and sisters, or uncles and aunts paternal or maternal), while the patient's own parents manifested no insanity themselves. If neurotic ancestors and near relatives were counted in the etiology as contributory proof of hereditary taint the total heredity of insanity in round numbers would mount to about 75 per cent. Studying the families of 623 certified patients it was found that insane parents or near relatives existed to the total of 702 in the 623 families; it was further ascertained that the neurotics numbered 240, the paralytics 191, the alcoholics 169, the tuberculous 259, and the cancerous 70 in the total number of the families. A large series of over 100 tables of data was exhibited and the whole body of facts was expounded with their aid. Dr. Urquhart urged, in conclusion, that in the study of the ancestral heredity of the insanities particular attention should be paid to the occurrence in the ancestory or close collaterals of the presence of psychoses, neuroses, alcoholic and drug habits, apoplexy, senile dementia, congenital mal-development with great eccentricity of mind, suicidal impulses, and the presence of the two great constitutional degeneracies, tuberculosis and cancer. The statistics of general hospitals constituted only a part, a small part, of the data required for a due investigation and study of heredity. Science, the high aim of which it was to search, to investigate, and to understand nature and thus to obtain the mastery of nature, should start with the belief that nature was intelligible, comprehensible, and to some extent conquerable. The time was approaching when, with the coöperation of pathology, clinical medicine, and comparative biology in the widest sense, a fuller light would be achieved regarding many of the mysteries of heredity.

Dr. T. B. HYSLOP (Bethlem Royal Hospital) said that the mental and physical health of the community was of the utmost importance, and judging from the trend of enlightened public opinion there was immediate need for legislation in matters pertaining to insanity. The large annual increase of insanity and the alleged prevalence of physical deterioration showed that there was retrogression in a large section of our race. There was need for a competent commission to inquire into the matter; the Commissioners in Lunacy were too much overburdened with work to be of any service in this respect. A thorough and systematic inquiry, of which the presidential address embodied the best features, was necessary. Dr. Hyslop also spoke on the subordinate rôle which toxins played in insanity, not as primary causes but frequently as "terminal infection" of the damaged body.

Dr. W. LLOYD ANDRIEZEN (London) referred to the biological aspects of heredity and variation, and stated that the higher animals and man showed more stability than the lower forms (protozoa and lower metazoa). Mutation, as described by Darwin, De Vries, and others, played a very important rôle in modifying heredity, and he spoke of recent researches in biology and mental pathology which showed that pathogenic mutations might occur in families of the human race and lead to three or four generations of cerebral and mental degeneration ending in extinction of the stock in question. Regression, as defined by Galton, affected only normal and small variations and kept them within conservative limits but pathogenic mutations ended in extinction of the stock in a few generations by its prepotency. So it was in many prepotent cases of tuberculosis, the insane diathesis, and cancer. He referred to the classical work of "The Jukes," by Dugdale, and to the continued production of demi-cretinism and sterile cretinism in parts of the world as classical instances of pathogenic mutation. Imbeciles, feeble-minded and defective children, anergic tramps, vagrants, and prostitutes were products of degeneracy brought about in various ways by the coöperation of bad parentage and evil environment, a grievous burden to the State, whose serious attention should be awakened from its long slumbers.

Dr. FLETCHER BEACH (London) referred to the tuberculous factor in the parentage which entered largely into the etiology of idiocy and imbecility as shown by the constant experience at Darenth Asylum, the Bicêtre, and other special institutions for idiots and imbeciles. As regarded the heredity of insanity proper—viz., the higher degenerative and the more purely psychic alienations—his experience agreed with that of Dr. Urquhart. He strongly hoped that the Government would take up the investigation of the matter.

Dr. A. M. JACKSON (Nottingham) spoke of the importance of studying the character, not only of the brain as such, but of its vascular condition in cases of hereditary insanity.

Dr. A. T. SCHOFIELD (London) said that there was much ignorance of the public as to insanity and its transmission, while some people exhibited callous indifference when they wished to marry and seldom or never followed the medical advice which they sought "for conscience sake." Disorders of excretion and digestion had an important etiological rôle in the development of insanity.

Dr. T. JOHNSTONE (Leeds) remarked that paranoia, a slowly progressive incurable insanity, might develop from eccentricity and that unsuitable marriages might induce hopeless hereditary insanity in the offspring of a tainted father or mother.

Dr. DAVID BOWER (Bedford) agreed generally with the facts and conclusions of Dr. Urquhart and spoke of the increase in alcoholic insanity.

Dr. ROBERT JONES (Claybury) said that heredity and environment were both important. Some insanities were

transmitted as intrinsic pathogenic variations of the embryonic brain and nervous system; such was the variety of delusional insanity founded upon definitely evolved hallucinations, also certain affective deep-seated insanities of the depressive and suicidal type. Some insanities owed little to heredity and much to stress (anxiety, shock, and great calamities). The cure of pulmonary tuberculosis would go a long way to diminish the lower forms of insanity—especially idiocy, imbecility, and feeble-mindedness.

Mr. EVAN POWELL (Nottingham) expressed gratitude for the splendid collection of valuable statistical material by the President of the section and hoped that other members would engage in similar investigation and "go and do likewise."

Dr. SCHOFIELD read a paper on

The Extension of Psychology in Medicine,

not, he said, as synonymous merely with the psychology of insanity but as embracing the field of psychological conditions observed in other diseases and in normal life. He spoke of the educational value of training in psychology, not the metaphysical speculative theories of armchair philosophers but the scientific structure of knowledge built up by observation, experiment, and induction in both normal and pathological human subjects. He also laid down certain statements as to the nature and relations of conscious, subconscious, and unconscious mind, using the last term in a wide sense to cover various phenomena of the life of the nervous system, not necessarily psychical but dependent on so low a level as the bulbo-spinal system.

The PRESIDENT of the section made some observations on the value of a knowledge of psychological medicine and urged that it should enter into the curriculum of the medical student, for every general practitioner and physician had occasionally to meet and to treat, at least temporarily, such cases on emergency and until a specialist could be consulted.

Mr. JAMES STEWART (Clifton) referred to the psychic action of drugs which was, he believed, generally neglected by those who prescribed them.

The discussion then terminated with a proposition drawn up by the PRESIDENT of the section, moved by Dr. HYSLOP and duly seconded, and unanimously passed, to the effect that the central council of the British Medical Association should be asked to appoint a committee for the investigation of hereditary forms of disease and to place at the disposal of the committee such funds as would enable it to report on the whole subject.

THURSDAY, JULY 27TH.

Mr. R. C. STEWART (Leicester) read a paper entitled

Short Notes on Lunacy in Leicester, showing Plans of the New County Asylum.

He dealt with the historical development of lunacy in Leicester, the erection of the asylum, and its administration under succeeding superintendents. Various improvements were made in the internal arrangements of the buildings as regards ventilation, flooring, and general hygienic condition until in the last decade the Leicester County Asylum was universally recognised as one of the best equipped and administered public institutions for the care and treatment of the insane in the Midlands. Referring to the problem of increasing admissions, Mr. Stewart said that the asylum was now very slightly overcrowded and consequently that only patients belonging to the county of Leicester could be admitted. The increased pressure on accommodation in recent years led to the adoption by the Leicester asylums committee of a plan of building a new asylum. The complete plans have already been prepared and the building is now in process of erection. Mr. Stewart showed on a large scale plan a number of interesting features in the disposition and arrangements of the wards and dormitories to secure for the patients free and ready access to the gardens and walks and described the addition of two houses to accommodate private patients paying one guinea weekly, detached from the main buildings and having almost the home-like appearance of villa residences which, he thought, would be appreciated by the patients.

Dr. JONES and Dr. BOWER made appreciative comments on some of the technical particulars of construction of the new asylum.

Mr. STEWART, in reply, said that the flooring adopted was a hard and almost imperishable structure of teak wood specially prepared for the purpose.

Dr. HYSLOP opened a discussion on

Occupation and Environment as Causative Factors of Insanity.

In dealing with the causation of the insanities, he said, "we must always take into account and allow for factors which are internal—i.e., either due to inheritance or the existence of some fundamental capacity which cannot be explained as the result of ancestral inheritance." It was also necessary to form clear conceptions as to the operation of sociological factors or, in other words, to the social environment and those which had their origin in physical causes either affecting the physical organism or having their seat in the physical mechanism itself. Regarding the British race they saw a remarkable transformation which had taken place. The race had passed from a natural state to an artificial one of enforced brain activity with all its attendant evils. The effects of rural and urban life had never been accurately determined. The transformation from rural to urban life was accompanied by influences which proved deleterious to mental health and stability. Migration from country to town not only brought about a condition of nervous strain for those who migrated but also left its stamp upon the depopulated rural districts in the form of degeneracy owing to intermarriage among relatives and the residuum of the less fit. Education and agricultural depression have favoured this tendency to migrate and they have also largely aided in changing the social conditions of those who by habit and heritage were ill-adapted for the expenditure of nervous energy. Whereas education and the requirements of this brain-age necessitated a constant increase in the output of nervous and mental energy so as to enable the greater number to reach the highest possible standard, the output of physical energy was undergoing a constant diminution owing to the "standardisation" of labour at a very low quantity, be it skilled or otherwise. They were confronted, therefore, with the problem of over-education and the possibility of a faulty expenditure of nerve energy, the problem of diminution of hours, and the various restraints imposed by trade unionism, not to mention other agencies which as a whole aided the tendency to standardise at the level of the least efficient and thereby to diminish the vitality of the British unit. Education wisely directed was not in itself an evil, but ever since the Education Act of 1870 they had been striving with faulty methods after the unattainable. With the increase in the imposition of every grade of education from the Board school to the highest university curriculum, the brain tax on the people had become more and more irksome and the amount of pauperism, overcrowding, and mental failure had increased by leaps and bounds far beyond anything before known in the history of the empire. The public mind was at present much agitated by the alleged prevalence of physical deterioration, by the diminishing birth-rate of the last few years, and by the increase in infantile mortality. The Bishop of Ripon, speaking in the House of Lords a week ago, gave it as his opinion that the facts revealed in the inter-departmental Commission on Physical Deterioration were pregnant with danger to the empire. He contended that unless some steps were taken the British race would no longer be able to maintain its position as a colonising and a ruling power. While the tendency to degeneracy of mind and physique arose from the modes of life and the unphysiological habits and surroundings of the male population now well understood, the occurrence of a similar downward tendency had been recently recognised in women. The causes of this were interesting. Alcoholic intemperance had, like secret drinking, been increasing among women partly owing to increased facilities of obtaining alcoholic liquors. Pregnancy, parturition, the puerperal state, and other conditions incidental to the female sex became greater sources of danger in the new modes of life and women were less fitted than men to withstand the strains upon their nervous systems. In a word, the removal of woman from her natural sphere of domesticity to that of mental struggle and fierce competition in the strenuous life had not only rendered her a physically feebler mother less fit to sustain the virility of the race but it had induced in her a tendency prone to issue in the increasing degeneracy of her progeny. Woman's rôle in this world was that of wife and mother. They granted to woman the right of being a great civilising and refining agent as well as being an ornament, but in intending her to be a mother nature gradually fashioned her destiny for woman in the æons of the past. And although much had been, and was being, done to improve the fitness

of the female population to become wives and mothers he thought there was a tendency on their part at the present day to depart from their rôle in nature and that the obligations of womanhood and motherhood were becoming through all classes of society more and more neglected. The forcing education and exhausting overstudy of girls in the period of puberty and adolescence rendered them neurotic and was incompatible with perfection of sexual development and vigour, their capacity for child-bearing and child-rearing was stunted, and the artificial conditions of society which demanded that woman should participate in the keen, arduous, and trying intellectual struggles and competitions, hitherto the lot of man alone, had done much to bring about the physical deterioration, the infantile mortality, and the diminished vitality of the progeny—the penalty exacted by nature for the violation of her laws. Modern conditions of life and society failed to recognise, indeed, looked with almost aversion on, the idea hitherto universally recognised that woman did more than half to fashion the destiny of the race, that her obligations began with childhood, culminated in the production and upbringing of children, and only ended when she had nourished her young and imparted to them a vigour and fulness of life which could not be obtained by any artificial modes of feeding so much in vogue at the present day. Men would be better able to support their wives and families if not handicapped by female competition; and by giving up many of the so-called claims of society, excessive personal adornment, or restless desire for amusement, in other words, by being content with a simpler life, woman would make the task of man much easier of accomplishment. It was a miserable travesty of the scheme of evolution that the brains of babies should be State-fed by mental arithmetic while their little bodies were nurtured by artificial foodstuffs derived from every available source other than their own mothers. Dr. Hyslop concluded with observations on the influence of the religious and moral environment on women. Religion and moral obligation overlapped each other considerably and both were the outcome in nature of a deeper lying fundamental law of wisdom and righteousness which revealed itself in the highest evolution of sentient beings, of whom man was the type on this earth of ours. To voice these problems of vital importance and interest to the welfare of the race he thought that the medical faculty should be more strongly (numerically) represented in Parliament.

In the discussion which followed Dr. ROBERT JONES referred to the influence of mental over-pressure in the production of insanity as given in the statistics of insanity in the profession of governesses who showed a higher percentage of insanity than did the class of licensed victuallers and barmaids. This was borne out by the reports of the Commissioners in Lunacy a few years ago, published shortly after the last census. He dwelt upon the degeneration occurring in the residual element left by extensive migrations from urban or country districts. He agreed with Dr. Hyslop as to the influence of religion, as he thought everybody would admit the influence of high ideals in enabling persons to preserve mental and physical health. Some of Dr. Hyslop's conclusions he thought indicated a pessimistic view in regard to womankind which he could not share.

Dr. ANDRIEZEN said that failures were inevitable in the progress of evolution of life and of races. A comforting assurance in regard to the hereditary transmission of evil traits was that the "tendency to regression" expounded by Galton showed that full inheritance was the exception and not the rule. Women had by long aeons of evolution reached the exalted position of motherhood, revered and honoured by man, and she should never relinquish it.

Dr. SCHOFIELD defended woman ardently against some of Dr. Hyslop's "strictures," as he thought they were. He considered it quite right that women should, if they wished it, enter into the competition of professional life. He would not debar them in such legitimate and praiseworthy aspirations. Religion was an important factor in influencing for good the baser and lower passions of man.

Dr. JOHNSTONE dwelt on the importance of the environment. In this connexion he quoted examples from Virgil, Tennyson, Byron, and others, and said that in the professions of divinity, law, and medicine the advantage lay with the last.

Dr. C. S. MORRISON (Hereford) spoke at some length on the evils of emigration resulting in the degeneration of the residuum left behind unless it was reinforced by fresh blood. Sometimes marked deterioration occurred in such depleted communities.

Dr. FLETCHER BEACH spoke of the great numerical excess of women over men which made the social problem hard and complex in regard to earning a living, for the "superfluous women" could never expect to find husbands. He looked upon teaching as an excellent occupation for women. He believed governesses were prone to insanity owing to the anxious and precarious nature of their profession.

Mr. JAMES STEWART said that women so long as they retained the freshness and attractiveness of youth would not experience difficulty in finding husbands.

Dr. HYSLOP replied.

Dr. W. A. POTTS (Birmingham) read a brief paper on

The Causation of Mental Defects in Children,

dividing the latter into the three classes of idiots, imbeciles, and the feeble-minded. These could again be divided into a "deviational" and a "degenerative" group. "Except the small number classified as deviations from the normal I ascribe practically all cases to physical degeneration at an earlier stage," concluded Dr. Potts.

Brief remarks followed the paper and after Dr. POTTS's reply the meeting terminated.

PATHOLOGY.

WEDNESDAY, JULY 26TH.

Dr. F. W. MOTT, F.R.S. (London), the President of the section, opened the discussion previously arranged for the day with an address entitled

The Relationship of Heredity to Disease.

First premising that the importance of heredity in relation to disease could only be estimated by carefully collected comparative statistics based upon a family history that included grandparents, uncles and aunts, and even first cousins, Dr. Mott referred to the commonplace observation "Like begets like" (which he contended was more correctly rendered by the formula "Like tends to beget like") as being first met with in the writings of Lucretius, and to the confirmation of this aphorism afforded by the independent observations of Galton and Weismann that each parent contributed one-fourth, each grandparent one-sixteenth, and so on, to the individual offspring. Instances of hereditary transmission of defective durability of special tissues—e.g., hereditary ataxy, or of inherited morphological defects of blastogenic origin—e.g., hæmophilia, polydactylism—afforded excellent examples for the study of hereditary transmission owing to the almost complete elimination of the personal equation of the observer and were illustrated by a series of lantern slides and their chief points of interest were enlarged upon. Inherited tendencies to defective metabolic processes and inherent deficiency of durability of the vessel walls was next discussed in its relation to presenility and arterio-sclerosis and contrasted with specific instances of inherited vitality and durability of the tissues. Diseases could be classified as inherited (i.e., directly derived from the reproductive cells before conjugation), congenital (acquired during intra-uterine development), and post-natal. Thus the subject under discussion was at once limited to effects produced on the germ cells before conjugation and whilst still in the bodies of the respective parents, and the President of the section proceeded to discuss whether the profound biochemical changes in the lymph and blood resulting from the action of poisons elaborated within the body (e.g., those of tuberculosis and syphilis) or introduced from outside (e.g., chronic alcoholism and plumbism) could so modify the male germ cell that the fertilising spermatozoa conveyed specific morbid characters and after conjugation with the healthy ovum led to the transmission of disease to the resulting offspring, and expressed the opinion that the causative agents of tuberculosis and syphilis were unable to pass into the head of the sperm cell without destroying it and so rendering conjugation impossible. Experience showed that syphilis, for example, had but little appreciable effect on the sperm cell and when transmitted to the succeeding generation was almost always associated with maternal infection. Dr. Mott here referred in some detail to his observations on parasyphilitic affections in general and the juvenile form of general paralysis in particular, which led him to agree with Koenig that general paralysis is an acquired disease due to syphilis and that one effect of syphilis upon the germ plasm in highly civilised races was to produce a neuropathic tendency. At the same time he

considered it an undoubted fact that the majority of children born of syphilitic parents possessed a marked immunity to the disease, for when exposed to the specific poison in later life either they acquired the disease in a very mild form or exhibited complete immunity, so that there was a striking tendency for the disease to be self-eliminating in its effects, and he mentioned the fact that he had only once seen a typical secondary rash in a man with the well-marked stigmata of congenital syphilis. Syphilis may therefore act as an eliminator of the unfit but if his premisses were correct it also acted as a causative factor in the production of degenerate stock, as owing to its long duration it tended to devitalise the reproductive elements as well as the body cells. Evidence was available, too, as to the devitalising influence of lead, for not only was chronic plumbism capable of producing abortion and miscarriage in the female but male subjects of the disease mated to normal females were sterile or gave rise to devitalised offspring which either died in utero or shortly after birth. Discussing next the influence of alcohol Dr. Mott referred to the generally accepted view that the poison was a potent factor in the production of mental and physical degeneracy of the offspring and pointed out that no certain data were available to combat the equally valid assumption that the mental defect of control, or what not, that led to the drunkenness in the parent was alone transmitted—increased perhaps owing to the influence of the poison and made permanent by imitation, and stated his opinion that alcohol was an active poison to all neuropathic stocks and so acted as an eliminator as well as a producer of the unfit, and in this connexion he differentiated between fermented alcoholic beverages and distilled liquors. The belief that tuberculosis was particularly prevalent, although preventable, in asylums was combated by evidence obtained by him in two of the London county asylums, which showed that between 40 and 50 per cent. of patients dying therein exhibited obsolescent or active tubercle, in the case of the majority dating back to a period prior to admission. Tubercle must be regarded as an expression of low vital resistance of an enfeebled and degenerate stock rather than a cause of insanity and although the germs of the disease were destructive to the individual they were, on the other hand, conservative to the race by removing the mentally unfit at an early period of adolescence; the probable explanation of the association of tubercle and insanity was to be found in the congenial soil provided by a stock with a neuropathic taint, especially when aggravated by alcohol and sexual excess. Another point relating to the elimination of the unfit was touched upon by Dr. Mott when he stated that the ranks of urban prostitutes were largely recruited from the morally defective and feeble-minded who, generally early in their career infected with the gonococcus, suffered from adhesive inflammation of the oviducts and were thus rendered sterile. He next dwelt upon the comparative value of statistics in relation to the hereditary transmission of nervous and mental diseases as illustrated by figures dealing with the London county asylums admissions for the last ten years. These, he pointed out, were untrustworthy, heredity as an assigned cause of insanity at one of the asylums being recorded as 11·7 per cent. in one year and 27·8 per cent. the next year, and he briefly discussed the factors that tended to make them so, expressing the opinion that the average in which heredity was the assigned cause of insanity is much below the real percentage and that insanity itself is certainly not decreasing but is probably increasing. In conclusion, the President of the section queried whether the slow increase of constitutional immunity and the securing of a better social environment for the masses were the only available means for the prevention of social degeneracy; or should some other means be adopted, such as the encouragement of the reproduction of the fit, the more effectual limitation of the reproduction of the unfit, or preventive measures against the spread of alcoholism, syphilis, and tuberculosis?

The results of the work of Dr. GEORGE A. WATSON (London) upon

Inherited Immunity: Experiments with Ricin and Abrin,

were then given by the President of the section in the absence of the author in some detail, from which it appeared that the effect of prolonged immunisation of rabbits and guinea-pigs against abrin and ricin was to diminish reproductive activity in both sexes, without, however, interfering with the sexual appetite; that when offspring resulted, especially when the female was the immunised parent, they were puny, born dead, or died shortly after birth; whilst the reproductive organs showed no changes to account for these facts. No immunity could be shown to be transmitted through the male parent alone but in one experiment the offspring of immunised parents showed considerable immunity, probably gained through the maternal blood and milk.

Dr ARCHDALL REID (Southsea) pointed out that in discussing questions of heredity it was necessary to distinguish between variations and acquirements. When a toxin circulating in parental blood injures the germ cell and so leads to the production of degenerate offspring it does not follow that the injury constitutes a variation—a new character transmitted to the offspring. It may be a mere acquirement and therefore not transmissible. In fact, it is almost certainly an acquirement, otherwise it would be impossible to explain why races which have long been subjected to the influence of such a virulent poison as that of malaria have not become extinct by accumulation of injury. The obvious conclusion to be drawn from this fact of the survival of races long exposed to particular diseases is that the toxins of disease, even when they act directly on the protoplasm, cause not transmitted variations but non-transmissible acquirements.

Mr. CHARLES J. BOND (Leicester) continued the discussion by contributing his study

On the Correlation of Sex and Disease.

Instancing first hæmophilia, the best-known example of a disease usually associated in its manifestations with one (the male) sex, although the abnormality was transmitted almost exclusively by the opposite (the female) sex, Mr. Bond pointed out another and equally important form of sex and disease association in which, whilst both sexes were equally liable to a given disease, in some particular family the males were attacked and the females escaped and in another family exactly the opposite took place, and illustrated his remarks by means of a family tree showing the incidence of ichthyosis on the male side and running through three generations. Passing then to deaf-mutism Mr. Bond stated that he had been able to investigate the family history in 12 instances and the important point brought out by his observations was that the abnormality, though affecting both males and females, was mainly limited to one sex in each family. The last family in his series was particularly striking in that the parents being healthy the first three children born of the union were females and healthy; the next six were deaf-mute males; then followed four healthy females; and finally a healthy male. Following this series of families Mr. Bond related a further series of five families in which both sexes were affected, explaining the apparently conflicting evidence by stating that the affected males and females were either twin or successive births or in one family the only two children born. Mr. Bond summarised his results by pointing out the absence of direct transmission of the disease from parents to the children; the marked fertility of the families in which deaf-mutism occurs, Leicester and Derby statistics giving an average of seven children as against an average of five; the affection of only one sex—and not always all the members of that sex—in a family; and in the exceptional cases where both sexes were affected in one family, the deaf-mute children were either twins or successive births. Mr. Bond remarked on the paucity of their knowledge of the factors which controlled the determination of sex and suggested that in the case of deaf-mutism the female or male sex character, as the case might be, in each family had become linked up with another character, in this particular instance an abnormality or disease—namely, deaf-mutism; and from the data he had placed before the section it would appear as though the gametes produced at one period of the life of the parents more nearly resembled each other than those produced at another period, either earlier or later, an assumption strictly in accordance with the results obtained in experimental breeding in animals. Mr Bond concluded by expressing the belief that sufficiently wide investigation would demonstrate the sex correlation of even the infective diseases, such as tuberculosis.

Mr. E. SCHUSTER (Oxford), the Galton Scholar in Eugenics, then read a paper entitled

On the Data required by a Statistician for the Study of Inheritance of Disease,

in which he suggested that the subject of the inheritance of disease was one which required ultimately to be dealt with by the statistician; and although statistical methods were

abused as leading to fallacious conclusions, such fallacies as they give rise to were due not to the methods themselves but to faulty methods of application. The problem set the statistician for solution in the present instance might be stated as "given a certain disease in some or all of a man's parents, grandparents, collaterals, &c., what was in each case the probability of the disease occurring in the man himself?" and provided the requisite data were forthcoming the problem could be solved with mathematical accuracy and precision. The requisite data were, first, the definition of a more or less homogeneous class—that was to say, a class of people belonging to more or less the same race and living under similar conditions as regards climate, housing, nutrition, &c.; secondly, the percentage incidence of the particular disease, as distinct from the mortality, in the class already defined; and thirdly, having defined the class and divided it into those who suffer from the disease and those who do not it was necessary to determine for each of those divisions what number possess ancestors or collaterals suffering from the disease. In other words, if it was desired to estimate the exact amount of force exercised by heredity in the production of a disease it was not sufficient to know the family histories of the people suffering from it; the family histories of people of the same class who did not suffer from it were also needed. Whilst it was impracticable to investigate every member of the defined class great care was needed in the selection of truly representative samples, for if genuine random samples were taken the error would be certain and determinable and would vary inversely with the extent of the sample taken.

Mr. C. C. HURST, F.L.S. (Burbage, Leicestershire) appealed to the medical profession to help in the good work of obtaining facts on the heredity of disease and suggested that such facts should be carefully obtained by a study of individual histories and pedigrees. He pointed out that Mendel's law of heredity which had only recently become generally known, although very simple, was undoubtedly of the highest importance. This law had been clearly shown to hold good for nearly all simple characters in plants and animals and it seemed possible that the more complicated inborn or inherited characters, such as those of disease, would also follow the same law.

Dr. A. W. GILCHRIST (Nice) suggested that the discussion had the utility of demonstrating that the aspect and claims of philosophic medicine were not neglected. He propounded the questions, what was heredity? and what was disease? and beyond the conventional definition that heredity was a virtually passive link in the succession of individual existences confessed his inability to furnish adequate answers.

The PRESIDENT of the section briefly summed up the chief points in the discussion and Dr. WRIGHT (Federated Malay States), in reply to a question from the PRESIDENT of the section, observed that the adults of certain aboriginal races exposed to infection by the quartan malarial parasite developed a marked immunity, whilst their offspring remained readily susceptible to the same infection.

DENTAL SURGERY.

WEDNESDAY, JULY 26TH.

This section met under the presidency of Mr. MORTON SMALE, when Dr. J. S. RISIEN RUSSELL (London) introduced a discussion on

Toothache, Neuralgia, and Remote Affections of Dental Origin.

He said that he left to Mr. J. H. Mummery the task of dealing with morbid affections of the teeth and their effects, and devoted his attention chiefly to the class of case in which the teeth were not at fault but other morbid conditions caused pain referred to them or to regions well recognised as the seats of pain of dental origin. He pointed out that many such patients consulted dental surgeons in the first instance, so that it was in their power to direct them into the proper channels where the real nature of their disease could be recognised and treated. The affections of the nose and ear were left for others to deal with, as were the affections of childhood incidental to the discussion. He passed in review general conditions, such as anæmia, malaria, diabetes, and the debilitating effects of diseases like influenza, and made brief reference to certain rare affections such as facial hemiatrophy. He warned his audience to be on their guard against hysteria and in dealing with neurasthenia he emphasised the importance of never ceasing to examine for indications of obscure organic disease. He laid special stress on cases of epileptiform neuralgia (tic douloureux), in which affection the extraction of teeth was worse than useless and in which the extirpation of the Gasserian ganglion offered the only possibility of certain cure, a procedure which he had no hesitation in recommending owing to the highly satisfactory results that were to be obtained by the operation as devised by Krause. Another class of case in which he regarded it as of the utmost importance that the dental surgeon should recognise that something other than the affection of the teeth was responsible for the pain for which he might be consulted was disease of the accessory sinuses, and he emphasised the extreme importance of the early recognition of cases where malignant disease was responsible for the pain. A third group of cases in which the dental surgeon might have opportunities of assisting to a correct diagnosis in early stages of the affections was that in which intracranial disease occasioned pain in the distribution of the fifth nerve, in which affection he would refer especially to the effects of intracranial syphilis and to tumours at the base of the brain which involved the nerve. In conclusion, he invited discussion, especially on the last three groups of cases to which he had directed attention.

Mr. MUMMERY (London) said that in following Dr. Risien Russell it only remained for him to confine his remarks to the more particularly dental surgery aspects of neuralgias. The full discussion on oral sepsis which took place at the last meeting of the Association at Oxford rendered it unnecessary to deal with that question in the present instance. The subject would be considered under certain headings related: first, to diseased conditions of the tooth pulp; secondly, to affections of the dental periosteum; and thirdly, to difficult eruption and malposition of the teeth. Pain in the course or distribution of a nerve was, like toothache, not a disease *per se*, but a manifestation of irritation at some one or other point of the nerve and its branches. The areas mapped out by Head showed that the several teeth exhibited certain pain localisations, the area affected including the special tooth involved. Neuralgia occurred in edentulous jaws and also in the wasted alveoli of teeth that had been lost. All diseased conditions of the teeth might give rise to neuralgias and, most importantly, morbid affections of the tooth pulps. After referring to the work of Dr. W. H. Gaskell and Dr. D. Ferrier and the important developmental relation of motor and sensory roots as shown by their work, he dealt with the two divisions of neuralgic pain of neuralgia minor—viz., true neuralgia minor and visceral referred pain—the chief differences being that in visceral referred neuralgia the areas of pain were not coincident with the distribution of the branches of the fifth nerve, whereas in true neuralgia minor this was the case. Neuralgia minor closely resembled neuralgia major or neuralgia quinti-major (tic douloureux) at first but it was impossible to find any connexion between the pain and any diseased organ to which the pain was referred. Neuralgia minor caused typical darting pains, but the pain followed the distribution of the peripheral nerves and was not associated with hyperæsthetic areas as was visceral referred neuralgia. There were maximum spots in these tender areas. Mr. Mummery then discussed the various pain areas and tenderness areas associated with the special teeth, to which scarcely sufficient attention was generally paid by the dental surgeon. He then proceeded to detail some cases of neuralgic pain and the evidence obtainable of its origin from a consideration of the pain distribution. He referred to various other examples of reflex disturbance, including vomiting, eye and ear affections, trophic changes, and emphasised the extreme importance of excluding dental causes in all cases of obscure neuralgia, which was rendered still more essential from the fact that apparently quite minor dental affections were associated with very considerable neuralgic pain.

Dr. URBAN PRITCHARD (London) continued the discussion and dealt with various affections of the ear, nose, and throat associated with dental origin. Such cases were, however, by no means so common as was generally supposed, "earache," especially in childhood, being considered by otologists as due to local inflammatory causes rather than to reflex irritation connected with dentition. In adults true neuralgia was more common and true neuralgia of the ear was more frequently due to dental reflex pain than to any other cause. Occasionally he was inclined to attribute to reflex

dental irritation some few of the cases of otitis media, especially in young children, not as the direct cause but as a contributory one in depressing the vitality of the affected ear. Such a supposition might account for the difficulty in treating cases of otitis media in children during teething. Arthritis of the temporo-maxillary articulation was another fruitful cause of neuralgia of the ear. Occasionally swelling and œdema of the tissues over the mastoid process were directly due to extension of inflammation from dento-alveolar abscess and might be confused with mastoid disease. Of the effect of removal of the teeth upon the acuteness of hearing he was inclined to be sceptical and although a history indicating such a circumstance was given by some patients it was to be regarded rather as *post hoc* reasoning. Chronic antral suppuration was also a cause of aural neuralgia.

The contribution of Dr. LEONARD G. GUTHRIE (London) to the discussion was read by the honorary secretary in the author's absence. Dr. Guthrie considered that although at one time "teething" and "breeding of the teeth" were so largely held accountable for most infantile diseases, and although the public even now persisted in ascribing all complaints of infancy to teething, perhaps they paid less attention to the subject than its merits deserved. At the very start they were handicapped by not possessing a proper explanation of tooth eruption of a sound physiological nature. In dentition increased salivation might be the only sign, but when pain existed the child often rubbed his ear or the back of his head showing that the pain was referred elsewhere. Convulsions were more common in children below the teething age than during it. Where an unrecognised pneumonic crisis corresponded with the eruption of a tooth it was possible that the one was referred to the other. The reflex theory would not explain all the complaints associated with painful dentition, neither would the pyrexial theory, while the supposition of especial susceptibility at the period of tooth eruption seemed opposed to the fact that dentition was a normal process. Painful dentition was invariably associated with gastro-intestinal disturbance and it appeared that painful dentition depended on a general disturbance with associated sore gums due to gastro-intestinal irritation of unsuitable or sour and fermented food.

Some remarks by Dr. E. CAUTLEY (London) were also read by the honorary secretary. Dr. Cautley considered the relation of the teeth to diseases in early life and in the course of his notes suggested that two main points required consideration—the teeth during eruption and during decay. Teething with "bronchitis," "gum rashes," and so forth were not infrequent expressions, and the diarrhœa frequently existing with teething was often neglected from its supposed origin in the mouth, and Dr. Cautley considered that a diagnosis of teething covered numerous sins of omission in the investigation of infantile ailments. Febrile attacks associated with sore gums might result in decrease of digestive juices and overfeeding to allay the fretfulness wrongly ascribed to hunger. The association of rickets with delayed and defective dentition was important. Pure reflex disturbances from diseased teeth were rare; in a few cases retraction of the head, common in meningitis or pneumonia, might be produced dentally. Fits were very doubtful reflex phenomena and were rarely ended by the eruption of the supposed offending tooth. Much more stress was to be laid upon the importance of decay of the teeth as a cause of ill health in early life than upon the process of eruption.

Dr. ROBERT HUTCHISON (London) considered it very doubtful whether the many disorders commonly and popularly ascribed to reflex nervous effects of dental origin had any relation to the process of dentition. The hypothesis of a "reflex exciting cause" was too often dragged in to explain something for which no adequate cause could be obtained. Convulsions were a particularly good example of this condition now generally recognised as of rachitic origin, while the unstable condition of the whole nervous system associated with this disease allowed the action of many exciting causes of which the cutting of teeth might be one although very far from the commonest cause of convulsions. A much more prominent rôle was to be ascribed to colic. A few remote disorders were aggravated by dentition, such as bronchitis and diarrhœa. A reflex congestion of the bronchial tubes might be associated with swollen and painful gums, thus predisposing to bronchitis, and the aggravation of eczema of the face appeared to be associated with reflex dental origin. The whole subject, however, was one upon which it was impossible to speak dogmatically.

The PRESIDENT of the section congratulated the section on the excellence of the discussion which on his motion was adjourned until the next day.

THURSDAY, JULY 27TH.

Sir VICTOR HORSLEY (London) continued the adjourned discussion. He said he was greatly pleased at the establishment of a section of dental surgery and that it was an excellent thing from both the general as well as the dental surgeons' point of view; moreover, the dental surgeon almost invariably saw the earlier manifestations of pathological changes involving the fifth nerve while the general surgeon usually did not see the cases until the later stages. The earlier changes might be termed congestive and the later cicatricial in neuralgias of the trigeminal nerve to which he would confine his observations. The cause of the neuralgia might be either central or peripheral and after reading the extract of Mr. Mummery's paper and the remarks of Dr. Risien Russell and other contributors to the discussion he thought that it was possible to diagnose between neuralgias of central and peripheral origin; it was difficult to classify but it was becoming increasingly easier. The cases of peripheral origin were those especially seen by the dental surgeon and in some of these peripheral cases, such as chronic osteitis of the alveolus and tooth sockets, an ascending neuritis had been traced. Bilaterality involved a serious question for the patient. The diagnosis between functional and organic disease, although difficult, was possible. Hypersecretion, such as increased lacrymal or salivary secretion, when associated with the irritation of the neuralgic attack, was a diagnostic sign of the organic origin of the neuralgia. Sir Victor Horsley, in continuing, proceeded to give the details of two cases in which the Gasserian ganglion was removed upon both sides. Loss of muscular movement of the jaws would follow removal of both ganglia but in these two cases the motor root on one side was left. Slight obliquity of articulation occurred but was not very noticeable and the neuralgia was cured. Neuralgias of central origin were due to primary neuritis of the ganglion or a neuritis spreading to it, acute inflammation of unknown cause, inflammatory changes due to the "micrococcus of herpes" and sclerotic and cicatricial inflammation. In most cases the ganglion was flattened by cicatricial tissue, sometimes congested and swollen. In these cases resection of the Gasserian ganglion was the only permanent cure. Other treatment was generally of a temporary nature, nerve section usually being followed by union in two years' time. The risk of the operation, although a serious one, was not very great. More than 100 cases had been operated upon, so that it was possible to talk in percentages. The accidental death-rate was 7 per cent., including hæmorrhage and septic infection. Up to 55 years of age the rate was very small and practically only due to sepsis; above 55 hæmorrhage associated with arterio-sclerosis, to which these patients were liable, caused 5 of the 7 per cent. of deaths. Eye risks were still smaller, but though the eye was not so often lost now there was still some unknown factor which caused keratitis.

Mr. F. J. BONNET (London) regretted the absence of Mr. W. Lang who was to have taken part in the discussion and who would have given a valuable contribution from the standpoint of the ophthalmic surgeon. Affections of the eye associated with, or due to, dental lesions had been recorded by Mr. Henry Power and Sir W. J. Collins amongst others, while not a few cases had from time to time been recorded by dental practitioners, and the speaker would confine his remarks to the dental surgeon's point of view. The vagaries of tooth disease were well known to dental surgeons and the dental practitioner was therefore able to form a clear idea of the class of case likely to be responsible for changes in the eye. By far the largest number of cases of eye disease associated with dental lesions were due to direct spread of disease from the jaws rather than to reflex disturbance. Thus, in a case described by Mr. Henry Power as a typical example of reflex amaurosis of dental irritation there was swelling of the face with discharge of pus in the neighbourhood of the lower eyelid. In looking over the reports of cases he found constant record of dead teeth and Sir W. J. Collins especially called attention to the undoubted evidence of the spread of oral inflammations in

several of so-called reflex amaurosis of dental origin. In one case recently blepharospasm was associated with septic infiltration and chronic periostitis of a lower wisdom tooth. Pressure on the tooth stopped the spasm. Several other cases of orbicular spasm were recorded. Finally, Sir W. J. Collins, in searching the records of the Ophthalmological Society, found no record of glaucoma, reflex amaurosis, phlyctenular ophthalmia, opthalmoplegia, or failure of accommodation attributed with any assurance or proof to dental lesions.

Mr. P. SIDNEY SPOKES (London) thought that the three papers of Dr. Guthrie, Dr. Cautley, and Dr. Hutchison were a valuable contribution to the question of dental origin of some diseases occurring in children, but the last paper appealed to him the most, inasmuch as Dr. Hutchison admitted that painful dentition might be one cause of infantile disturbance and that at any rate some such condition as eczema might be exaggerated during the period of teething. That reflex irritation of dental origin might be caused by dentition was proved by the occurrence of cough regularly present in some cases during the eruption of successive teeth. Mr. Spokes had seen cases in which there was no stomatitis and no oral inflammation with the exception of a small area over the erupting tooth, and in several of these cases incision of the gum was followed by a cessation of the associated convulsions. There was no suspicion of rachitis or intestinal disease. Mr. Spokes mentioned a case of frontal neuralgia in which the teeth were entirely eliminated as a cause and in which the antrum was opened and found to be normal; the neuralgia entirely disappeared on the discovery and removal of a stone from the bladder by Mr. Rickman J. Godlee.

Mr. H. BALDWIN (London) thought that the previous speakers were inclined to overlook the fact that living irritated rather than dead septic pulps were the cause of dental neuralgia. He mentioned two cases, one in which acute occipital neuralgia at the point of insertion of the trapezius was cured by the treatment of a second upper molar, and the other where mammary neuralgia was associated with a small cavity in a lower second molar.

Dr. E. A. BOGUE (New York) said that he could not adequately discuss the papers contributed to the discussion as that particular line of work had largely passed out of the practice of himself and his *confrères* in New York. One case, however, which came under his own observation was perhaps instructive. A second right lower molar was treated for an exposed pulp and, as the after-history showed, only a portion of the tissue was removed. Pain occurred and was attributed by the patient to the first lower molar. The pulp of this tooth was destroyed. The pain, however, recurred in the antrum, which was opened from the nose, but no diminution of the pain took place. A bicuspid tooth was therefore removed and the antrum explored through the socket with no effect. Subsequently section of the inferior maxillary nerve was performed, together with an incision for the ligature of the external carotid if necessary. Finally, one of the kidneys was removed. At the end of five months the original tooth was removed and the pain ceased.

Mr. FRANK E. HUXLEY (Birmingham) said that the sensitive and painful areas indicated by Dr. Head were valuable as aids to diagnosis but it must be remembered that notable exceptions occurred. He instanced cases of supra-orbital pain associated with a third lower molar; pain in the upper bicuspid region associated with a nasal polypus, the teeth being tender to percussion. Cocaine spray in the nose caused temporary relief of the pain. A third case quoted by Mr. Huxley had all the characters of epileptiform neuralgia associated with increased salivation and lacrymation. There was no dental cause discoverable. A change of residence to another part of the country was followed by diminution in the severity and, finally, entire cessation of the attack.

Mr. J. LEWIN PAYNE (London) described a case of Pure Reflex Pain in a lower second molar which was entirely relieved by treatment of the upper third molar on the same side. He had also seen a case where antral suppuration was associated with hyperæsthesia of the scalp. In determining the cause of so many cases of reflex pain being associated with dental lesions the probable explanation was to be found in the delicate nature of the tooth pulps, their confined position, and their irregular reparative efforts when undergoing chronic inflammation.

Mr. H. A. T. FAIRBANK (London) said that very few of the cases described in the discussion came under observation at the surgical out-patients' department of a children's hospital. Dentition had practically no direct effect upon the ears and he was unable to call to mind a single case in which dental irritation was the cause of pain about the ears. Convulsions were probably intestinal toxæmic manifestations and although stomatitis was common among out-patients at children's hospitals yet convulsions, except of a very severe type and associated with much septic absorption, did not occur. Infantile scurvy was also a cause of soreness of the gums. Two cases of pain in the mastoid region in two girls of about seven years of age had been seen by the speaker which were essentially of dental origin and due to carious temporary teeth.

Mr. A. S. UNDERWOOD (London) cited two cases of peripheral neuralgia of dental origin and a case of alopecia associated with marked oral sepsis. He would like to ask Mr. Mummery if there was any chance of direct influence of the dental cause upon the alopecia.

Mr. J. F. RYMER (Brighton) thought the electric currents set up in the mouth by various metals should not be lost sight of in elementary causes of neuralgia.

Mr. K. W. GOADBY (London) called attention to the presence of minute and even microscopic defects or cavities in the enamel of teeth, which were found to be connected firstly with infection of the dentine and secondly with direct pulp infection by capillarity along the dentinal tubes. He cited a case in which rheumatoid arthritis of the temporo-maxillary joint produced reflex pain in the ear and first upper molar tooth.

Mr. J. G. TURNER (London) said the utility of Head's areas could hardly be sufficiently insisted upon and the suggestions of Sir Victor Horsley that organic diseases could be differentiated from functional was of the utmost importance in the diagnosis of trigeminal neuralgia from cases of dental origin, while the ascending neuritis by exostosis and sclerosis of the bone involving the terminal filaments of the fifth nerve was worthy of much attention. Mr. Turner then considered the neurasthenic type of neuralgia which was at times associated with the dental neuralgia and detailed a case where the cause was directly referable to the involvement of the nerve endings in the spicules of bone left after difficult extraction. In some neurasthenic cases suggestion appeared to be of some value and he had removed a tooth from a neurasthenic patient, without an anæsthetic and with no pain, by suggestion. Mr. Turner cited other causes of reflex neuralgia and further discussed the relationship of Head's areas to the individual teeth.

Dr. J. O. BROOKHOUSE (Nottingham) detailed a case of neuralgia of the fifth nerve in which the pain was limited to the angle of the mouth. There was no hypersecretion. Operation upon, and section of, the infraorbital branch was performed but the pain recurred. The inferior dental nerve was stretched but in 18 months the pain recurred. In the speaker's own practice for over 40 years great attention had been always given to the hygiene of the mouth and not a few cases of pain of dental origin referred to other organs had been seen. Rheumatism, or something almost indistinguishable from rheumatism, was frequently associated with oral sepsis.

Mr. W. ARMSTON VICE (Leicester), who described a case of neuralgia of obscure dental origin, and Mr. J. S. SLOAN (Leicester) also joined in the discussion.

The PRESIDENT of the section thanked the various contributors for their assistance in an extremely important and interesting discussion and invited Mr. Mummery as one of the openers to reply.

Mr. MUMMERY briefly replied.

Mr. GOADBY read a paper on

The Method of Vaccine Treatment in Chronic Alveolar Osteitis.

The affections known as Rigg's disease, he said, were of several varieties. Among these one class of case, although not showing signs of acute infection or toxæmia, had many general symptoms referable to the mouth lesions. The blood examination in such cases showed a distinct though slight anæmia, which anæmia did not clear up under the usual general treatment adopted. There was often an acneform eruption on the cheeks and also of the nose. In the alveolar sockets and pus of the cases he had found staphylococci which, however, showed some differences from the ordinary staphylococcus aureus. He had tested the opsonic reaction of the patients and found it below normal for the staphylococcus obtained from the mouth. Vaccines were therefore prepared and the cases were inoculated. A marked improvement in the opsonic index was observed in

individuals so treated and at the same time the blood condition improved and the local affection began to clear up. In a number of the cases so treated the local discharge of pus from the alveolar sockets ceased and the teeth became firm again. The acneform eruption on the face improved and in one instance a deep acne with much pustule formation associated with Rigg's disease entirely disappeared. Two cases of chronic nasal suppuration had been treated. One, a chronic antral empyema, which had been operated upon four times and at the time of injection was still discharging and was also causing neuralgic pain, entirely cleared up in three months. Details of other cases were given. In estimating the opsonic index he had observed that the most important factor was the time during which the serum was allowed to act. In a series of experiments the number of bacteria taken up by the corpuscles was proportionate to the time in every case, while no alteration was observed in the ratios by using one or three volumes of serum or corpuscles. The lassitude so frequent in the class of oral suppuration described was rapidly lost under the effect of the injections. The method of treatment promised to be very advantageous in treating alveolar pyorrhœa (a notoriously difficult disease to eradicate), by increasing the resistance to the bacteria causing the suppuration. The local treatment was, however, by no means to be neglected. A table illustrating the various alterations of opsonic index in relation to injection was also given. The negative phase of Wright was well marked and in some cases showed a marked prolongation; in two such cases nuclein had been administered and apparently produced a diminution in the length of the negative phase. Some of the cases showed a secondary negative phase after the positive one. Staphylococcal injections were contraindicated in cases of kidney disease owing to the selective action of the bacteria for those organs, as shown by the pyonephrosis and cortical abscesses produced in the rabbits inoculated with the cocci obtained from the pus in the cases described.

TROPICAL MEDICINE.

WEDNESDAY, JULY 26TH.

Professor RUBERT W. BOYCE (Liverpool), the President of the section, delivered an introductory address entitled

The Year's Progress in Tropical Medicine.

He stated that the record of the progress of tropical medical science, if perhaps not rich in discoveries as last year, showed both an increase in the amount of careful scientific observation and the practical good of the application of scientific knowledge to the prevention of disease over an ever-widening area of the world. Among many subjects of interest none perhaps was more worthy of note than the fact that some of the natives of the Gambia in whose blood Dutton originally detected the trypanosoma had since developed and died from sleeping sickness. During the past year Thomas had conducted an exhaustive experimental inquiry on the treatment of sleeping sickness and found that arsenic compounds in the various trypanosoma diseases of the lower animals had afforded encouraging curative results. In connexion with the Leishman body excellent work had been done by Rogers, Leishman, Donovan, Christophers, Balfour, and others. Bentley had contributed to our knowledge of protozoology, James and Patton had described leucocytozoa in certain animals, and Balfour and Christophers had found hæmogregarines in the red cells of certain animals. Ross and Milne had communicated the interesting discovery that spirochætæ were present in the blood of cases of tick fever and Todd and Dutton had succeeded in infecting the monkey and rat by means of ticks infected by feeding upon the blood of cases of tick fever in man. They concluded that tick fever was clinically identical with relapsing fever and that the transmission of the tick was not merely mechanical. Greig and Gray had been working on sleeping sickness in Uganda, and Dutton and Todd had followed sleeping sickness and tick fever along the waterways of the Congo. Thomas and Breine were engaged in the investigation of yellow fever on the Amazon, and Bruce had succeeded in elucidating the manner of infection in Malta fever. Surely no other department of medical science could show such activity as this nor did there exist one that deserved more strongly to be supported.

Dr. JOHN L. TODD contributed a paper by himself and the late Dr. J. EVERETT DUTTON entitled

The Nature of Human Tick Fever in the Eastern Part of the Congo Free State, with Notes on the Distribution and Bionomics of the Tick.

On Nov. 26th, 1904, Dr. Dutton and Dr. Todd published the statement that a spirillum was the pathogenic agent of the human tick fever that occurred in the oriental province of the Congo Free State and that they had succeeded in infecting monkeys with the spirilla through the bites of ticks. Tick fever, according to the observations of Dr. Dutton and Dr. Todd, was a relapsing fever produced by a spirillum probably identical with spirochætæ Obermeieri and this organism was transmitted by the bite of a tick subsequently proved to be the ornithodorus moubata. The history of human tick fever in the oriental province of the Congo Free State dated back to the time of Livingstone. Hinde, in 1892–94, stated that the natives of the Congo attributed some of their illnesses to the bites of the ornithodorus. The symptoms were liable to be mistaken for other diseases and by the microscope alone was it possible to clear up the diagnosis. The incubation period of tick fever was about one week. The chief symptoms were headache, browache, backache, distaste for food, vomiting, slight diarrhœa, with decided increase of temperature. The attack usually lasted three or four days, ending in free perspiration. There were usually three or four attacks with an intervening period between each of from five to ten days. Splenic enlargement, herpes, epistaxis, and hiccough were frequent accompaniments. Experiments indicated that the ordinary laboratory animals were not killed by the disease. In the blood the spirillum could easily be found when plentiful as a rapidly moving spiral thread; when scanty it was necessary to stain dehæmoglobinised blood stained by a modification of Romanowsky's method or a weak solution of carbol-fuchsin. The distribution of the human tick in the Congo Free State and its bionomics were also entered into in detail in the paper and the writers concluded that: (1) tick fever was clinically identical with relapsing fever and had for pathogenic agent a spirillum; (2) the spirillum was probably spirochætæ Obermeieri; (3) the tick ornithodorus moubata could transmit the spirillum from animal to animal; (4) the transmission was probably not merely mechanical but some developmental process was carried on in the tick; and (5) a considerable degree of immunity or tolerance to the spirillum could probably be acquired.

Mr. R. NEWSTEAD, of the Liverpool School of Tropical Medicine, read a paper

On the Pathogenic Ticks concerned in the Distribution of Disease in Man, with Special Reference to the Differential Characters in Ornithodorus Moubata.

He said that ticks (ixodoidea) belonged to the class arachnoidea (spiders, mites, &c.), order acarina. This super family (ixodoidea) consisted of two sub-families—the argasinæ and the ixodinæ. The former was composed of two genera, argas and ornithodorus; the latter comprised nine genera. Mr. Newstead had found that in many respects the habits of the ornithodorus moubata were not unlike those of argas persicus, but the inert character of the larva of ornithodorus moubata was unique among the ixodinæ, in that it passes the whole of its life within the egg. The female ornithodorus moubata laid eggs which were hatched not as larvæ but as nymphæ, although on the ninth day the larva was fully formed and the egg shell split but the young tick remained until the fifteenth day when as a nymph it escaped simultaneously from its larva covering and egg shell.

Dr. L. W. SAMBON (London) said that if the spirillar disease was carried by the ornithodorus moubata in Africa then probably the disease miana in Persia carried by argas persicus was also a spirillar disease—possibly identical with relapsing fever. The question was whether the relapsing fever in India was also carried by a tick. Recent facts prove the correctness of the statement that bugs were the carriers of relapsing fevers in southern Russia and other parts of Europe. Dr. Sambon referred also to the extraordinary changes which take place in the stomach of the tick after feeding on blood: the cells take up part of the blood and empty it directly into the body cavity.

The PRESIDENT of the section referred to Christie's observations in Uganda that the tick carried the filaria perstans.

Major R. ROSS (Liverpool) mentioned the presence of a small tick which attacked Europeans in India.

Dr. J. C. GRAHAM (London) stated that he had seen a small green tick which attacked man in Sumatra.

Dr. A. J. CHALMERS (Colombo) referred also to a virulent tick in Ceylon.

Mr. JAMES CANTLIE (London) described the case of an officer engaged in the Thibet campaign who was suffering from a form of sore ascribed to the bite of a tick.

Fleet-Surgeon P. W. BASSETT-SMITH, R.N., contributed a paper on

Bruhl's Disease, with Special Reference to the Blood Changes found, and Connexion with the Leishman-Donovan Bodies.

Acting upon a suggestion made by Dr. J. C. Low, of the London School of Tropical Medicine, he examined the blood of two patients at Haslar suffering from splenic anæmia or Bruhl's disease as to the presence of the Leishman-Donovan body. In neither case did he find the parasite and concluded that this class of cases came under the category of primitive splenomegaly in contra-distinction to the true tropical splenomegaly in which the Leishman-Donovan bodies played so important a rôle.

Sir PATRICK MANSON (London) communicated

Notes on Two Cases of Febrile Tropical Splenomegaly (kala-azar) and a Suggestion.

The cases were typical cases of kala-azar in which Leishman-Donovan bodies were demonstrated. The life-history of the Leishman-Donovan body had not yet been satisfactorily worked out. The question of the identity of the Leishman-Donovan body and that found in oriental sore was an interesting one. In tropical splenomegaly the Leishman-Donovan body was found in the spleen, liver, bone marrow, glands, intestinal ulcers, and elsewhere but in oriental sore it occurred only in the sore; the former was accompanied by marked constitutional disturbance but the latter by apparently local changes only. Oriental sore was a disease of countries in which the camel was a prominent domestic animal and some held that the disease was conveyed by the camel. In this way oriental sore might bear the same relation to kala-azar that vaccinia did to small-pox; the virulence of the kala-azar germ (seeing that the germs in kala-azar and oriental sore were identical) might be got rid of whilst passing through the camel as the small-pox germ was deprived of its virulence by passage through the cow. Did these suggestions prove to be correct a means of preventing kala-azar would seem ready to hand.

Major ROSS stated that mule drivers as well as camel drivers were liable to oriental sore.

Dr. W. M. GRAHAM (Sierra Leone) contributed a paper on

The Guinea-worm and its Hosts.

Dr. Graham's observations were made on the Gold Coast where he was struck by the importance of Guinea-worm disease and the number of native troops yearly incapacitated by it. He found that the infection of man by the worm took place during a few months of the year and that it did not occur during the other months. In Salaga the month of greatest incidence was May, but in Gambia it was June; this would appear to show periodicity. The fact that the cyclops (the presumed intermediate host) showed its maximum manifestation during the period corresponding to the maximum infection in man also contributed towards the belief in periodicity.

In the discussion upon Dr. Graham's paper on Guinea-worm the following took part: Dr. W. C. BROWN (Penang), Dr. CHALMERS, Dr. F. M. SANDWITH (London), Dr. SAMBON, Dr. W. T. PROUT (Gold Coast), Mr. J. T. CLARKE (Perak), Dr. C. F. HARFORD (London), Mr. NEWSTEAD, and Dr. CLAUS SCHILLING (Berlin).

THE ANNUAL EXHIBITION.

III.—FOODS AND FOOD PRODUCTS.

THE exhibits coming under this division were not a strong feature of the exhibition this year and they included many well-known preparations which have been shown on previous occasions. Mention may be made of the specialities of Bovril, Limited (152–166, Old-street, City-road, London, E.C.), including virol which has now had the trial of experience with excellent results, rations, and essence of beef; the milk preparations of the Aylesbury Dairy Company, Limited (St. Petersburg-place, Bayswater, London, W.), comprising humanised milk, a concentrated preparation which on dilution gives a fluid of the composite of human milk, pollyta, a solid milk food, and humanised sterilised milk; Horlick's malted milk (Horlick's Malted Food Company, 34, Farringdon-road, London, E.C.); shredded wheat (The Shredded Wheat Company, 6 and 8, Eastcheap, London, E.C.), containing the entire constituents of the wheat berry steamed, cleaned, and shredded; a series of digestive ferments and meat foods by Armour and Co., Limited, of 46A, Holborn Viaduct, London, E.C., including pepsin, pancreatin, bone marrow, and the active principle of adrenal substance; Mellin's dietetic preparations (Mellin's Food Works, Peckham, S.E.), comprising food biscuits, infants' food, and "lacto," prepared from the infants' food and fresh cow's milk (the exhibit included a specially designed feeding bottle); milk foods by Henri Nestlé (48, Cannon-street, London, E.C.), including full-cream condensed milk, milo food, and chocolate; starchless foods by Messrs. Callard and Co. (74, Regent-street, London, W.), including bread, biscuits, cakes, as well as sugarless marmalade, jam, jellies, and beverages; albene, a pure, refined vegetable fat, a substitute for cooking purposes for butter, by Messrs. Broomfield and Co. (83, Upper Thames-street, London, E.C.); a fluid malt extract by M. Hoff (29, New Bridge-street, London, E.C.) (the exhibit included also ironol, an organic iron compound said to be easily assimilated); gluten bread, biscuits, and flour by Messrs. G. Van Abbott and Sons (Baden-place, Crosby-row, Borough, London, S.E.), and almond bread, &c.; an excellent series of digestive and other products by Messrs. Fairchild Brothers and Foster (Snow-hill Buildings, London, E.C.), including peptogenic milk powder, panopepton, lecithin, pepsin, and zymine or pancreatic extract, and zymine peptonising tubes for peptonising milk; patent barley and groats by Messrs. Kent, Robinson and Co., Limited (Denmark-street, St. George's-in-the-East, London, E.); diabetic foods of the Manhu Food Company (23, Mount Pleasant, London, W.C.), of which it is stated that the carbohydrates are changed and made so easily digestible as not to aggravate the symptoms of the disease; specialities for invalids, comprising essences of beef, mutton, veal and chicken, and jellies by Messrs. Brand and Co., Limited (11, Little Stanhope-street, Mayfair, London, W.); diabetic foods, bread, and biscuits, and invalids' and infants' foods by the Cheltine Foods and Chocolate Co., Limited (Cheltine Works, Cheltenham); and maltine plain and with pepsine and pancreatine, with hypophosphites, iron, or cod-liver oil, by the Maltine Manufacturing Company, Limited (24 and 25, Hart-street, Bloomsbury, London, W.C.) (the exhibit included the liquid peptonoids and beef peptonoids of Messrs. Carnrick and Co. of the same address as the Maltine Company.

Less well-known than the foregoing owing to their comparatively recent introduction was the pioneer milk sugar of the Pioneer Milk Sugar Company (24, Minories, London, E.C.). As our analysis has shown this preparation is practically pure milk sugar and therefore is suitable for use in the preparation of humanised milk; "Veda" bread and oat foods of the "Veda" Food Company (34, North Bridge, Edinburgh), which are produced by a new method of treating wheat and oats so that the carbohydrates are largely reduced to a soluble condition—the bread is excellent and, judging from its analysis, should be considerably more nutritious than ordinary bread; Moseleys food, prepared from wheat and dextrinised and containing therefore a large percentage of soluble carbohydrates besides proteid (Foods, Limited, Stockport); and wheat-meal brown bread by Messrs. J. Reynolds and Co., Limited (the Albert Flour Mills, Gloucester), said to be made from selected wheat, and it certainly has an excellent flavour, which is one indication at any rate that such is the case.

IV.—SANITARY APPLIANCES.

This section was not very representative, the exhibits consisting chiefly of disinfectant preparations and disinfecting appliances. An exception appeared in the case of the exhibit of Messrs. D. T. Bostel and Sons (71 and 73, Ebury-street, London, S.W.). This firm showed the Bostel patent natural seat and water-closet which was recently noticed in THE LANCET. The closet and seat aim at securing the natural squatting position during defæcation and the model exhibited met with the approval of many of the visitors. Besides was shown the "Bostel fire," which is correctly described as an appliance for heating the room and not the chimney. The grate lifts up so that a draught of air is compelled to go through the bottom and the bars of the grate

when it is desired to rouse the fire into activity. The Bostel patent hydraulic drain jointer and cleaner was also exhibited. This is an ingenious apparatus designed for the repairing of sewers or drains without "grubbing up" the pipes or the soil in which they are laid. A cylinder of freshly made cement passes along the pipe under pressure and cement escapes into any opening or defect which it effectually seals. Messrs. Young (72, Mark-lane, London, E.C.), showed their patent hygienic bins made of galvanised steel without internal corners or crevices, so that no lodgment or retention of the contents can take place when the bin is in use or emptied. Messrs. J. Defries and Sons, Limited (146 and 147, Houndsditch, London, E.C.), showed a model of the Equifex steam disinfector besides various types of Pasteur filters and disinfectant compounds, including cyllin, formaldehyde, and paraform tablets. The Jeyes' Sanitary Compounds Company, Limited (64, Cannon-street, London, E.C.), also exhibited a number of preparations of "cyllin," a disinfectant fluid which is said combines the maximum of efficiency as a bactericide with the minimum of causticity and toxicity to the higher forms of life. Messrs. Newton, Chambers and Co., Limited (Thorncliffe, near Sheffield), exhibited izal and its preparations. Izal itself is a powerful germicide though non-corrosive and non-poisonous. Compared with previous years it will thus be seen from this notice that the exhibits of the sanitary section were by no means very diverse in character.

ASYLUM REPORTS.

Inverness District Asylum (Report for the Year ending May, 1904).—The report of the medical superintendent of this asylum, Dr. R. B. Campbell, states that 178 patients were admitted during the year, which is a large number for an asylum of this size. The average for the past ten years is 160. Of the 178 patients admitted 140 were first admissions. The discharges amounted to 108, of whom 78 had recovered. The deaths numbered 41, giving a death-rate of 6·4 per cent. on the average number resident, as compared with 9·7 per cent. in the Royal and district asylums of Scotland for 1903. Pulmonary tuberculosis accounted for 29·2 per cent. of the deaths—a high proportion. The average number resident during the year was 637. The recovery-rate, calculated on the admissions, was 43·8 per cent.—a high rate decidedly and comparing well with the 39 per cent. of the Royal and district asylums of Scotland. The number of readmissions has been large during the past few years, which is ascribed to the discharge of quiet and manageable patients; in many cases these break down outside asylum care. Nevertheless, it is stated that the system of boarding out harmless cases in private dwellings proves successful in the majority of cases. During the past four years no fewer than 160 patients have been discharged unrecovered and sent to their friends or boarded out with great relief to the institution. Homes are easily found, it is stated, for industrious patients but not for idle ones. No less than 13 of the admissions were over 70 years of age. 80 of the 178 were regarded as curable. Heredity of insanity was traced in 52 of the admissions; alcoholic excess in 19. During the spring there was "an epidemic of rheumatism, evidently of an influenzal nature"; the type was mild; both inmates and staff were attacked. One fatal accident occurred, a patient breaking away from his attendant whilst on his way to the bath and thrusting his head into the hot water running from the tap of the latter, which resulted in severe scalding and death from shock. The District Board of Lunacy, recognising the value of agricultural labour as a curative agent in the treatment of certain phases of mental disorder, has purchased a further 200 acres of land. The benefits anticipated from such labour and from a plentiful supply of home milk (the allowance of breakfast milk has been doubled) as distinct from contract milk are likely to be realised. From the two reports of the Commissioners in Lunacy the asylum is evidently fulfilling its purpose with efficiency. From the list of the asylum officials it appears that there is only one assistant medical officer, which is a small allowance for an institution of this size.

Looking Back.

FROM

THE LANCET, *SATURDAY*, August 4, 1827.

SMALL POX.

To the Editor of THE LANCET.

SIR,—My attention has been excited to a leading article[1] in your Journal, No. 202, for the last month, headed, "Iniquity of inoculating for the small pox," and although I am perfectly prepared to subscribe, in the full extent, to the correctness and propriety of the observations you have made in exposing and denouncing a practice that cannot be defended upon the principles of justice, of morals, or of humanity, yet I cannot forbear expressing my surprise that you, who upon almost every other occasion appear to be possessed of the eyes of Argus, should have found it necessary to travel into one of our Western Counties to show up the character of one who openly manifests his disregard and contempt of public opinion, in opposition to nine-tenths of the more enlightened and disinterested members of his profession. I say, Sir, I am rather surprised that you should have so done, because I regret to say there are some practitioners, in the environs of this great metropolis, who are daily doing, *under coverture*, what this person has the greater manliness and honesty to do *openly*, and probably under the persuasion that he is acting right; whilst the individuals to whom I now allude profess to be the *disinterested friends of vaccination*, and yet are formed of such accommodating materials that they will consent to scatter the poison of small pox, by *inoculation*, at the invitation of the most illiterate and prejudiced members of the community. This, Sir, is no overcharged statement, the truth of which can be substantiated by irrefragable testimony. Nearly twenty years ago, I made a proposition to two of the most influential practitioners in my own neighbourhood, to enter into a covenant with each other to decline small pox inoculation altogether, but I am sorry to say with no success; and notwithstanding I expostulated, and argued upon the imperative propriety of the measure, in reference to the interests of science, of the public health, and morals, all my efforts were vain. The practice was then, and still is, defended upon one ground, *self interest*, and I was silenced with the *dignified* and *disinterested* reply, Mr. ——, though he approves of cow pox, inoculates for the small pox, and if I do not I shall *lose* my patient! This temporising and disgraceful policy continues still to be pursued by the parties to whom I have alluded, and, to my shame I confess, I have, in some instances, been compelled to follow the influence of bad example, rather than suffer my prejudiced and obstinate applicant to pass over to my competitors.

It is to be lamented that there has been, perhaps in every man's practice, a few cases of *variolous disease* subsequent to vaccination; those which have fallen under my own observation have been of the modified kind, distinct and mild in their character, and accompanied with slight constitutional disorder. It is to be deprecated that so much popular hostility should still exist against the adoption of this great national antidote to one of the most loathsome and destructive contagious diseases that ever desolated the world. But the longer I reflect upon the subject the more I am convinced that nothing short of a legislative enactment will ever render its introduction universal in our native island. Hoping that your able and unwearied exertions will hasten the consummation of so desirable an object,

I remain Sir,

Yours, very respectfully,

London, July 26, 1827. VERITAS.

[1] See "Looking Back" in THE LANCET, July 15th, 1905, p. 176.

WEST CORNWALL INFIRMARY.—The Local Government Board has sanctioned the contribution of £100 by the Penzance board of guardians towards the new West Cornwall Infirmary at Penzance.

THE LANCET.

LONDON: SATURDAY, AUGUST 5, 1905.

Rex v. Devereux.

NEARLY six months after committing one of the most revolting murders in the annals of crime, ARTHUR DEVEREUX was convicted and sentenced to death at the Central Criminal Court on July 29th. In this case Nemesis was slow but sure and relentless. On Jan. 31st the victims of the tragedy—mother and twin children—met their fate. On April 13th their bodies were discovered in a tin trunk stored away in a warehouse at Kensal Rise. Shortly after the latter date DEVEREUX was arrested at Coventry and charged with the capital offence, but it was not until more than three months had elapsed that he took his stand in the dock at the Old Bailey to answer the indictment against him. On two occasions the trial was postponed at the instance of counsel for the prisoner on the ground that important evidence was being sought in his interest. How valueless was that testimony is now matter of history, for all the witness could allege was that some six years ago Mrs. DEVEREUX stated that rather than lead a life of immorality she would kill herself. Considering some of the circumstances of the interview this could not possibly be distorted into a threat of suicide by a dutiful child and chaste wife as Mrs. DEVEREUX was. The other threads, equally flimsy, upon which it was sought to hang the theory of self-murder were: firstly, that 30 years ago Mrs. DEVEREUX's mother suffered "mental disturbance"—probably the delirium of fever—after a premature confinement; and secondly, that her brother mysteriously disappeared two years since. His clothes were found on the shore at Plymouth Hoe but his body was never discovered. That he passed into oblivion is certain; that he destroyed his life is conjectural. No doubt Mrs. DEVEREUX's married life was full of trouble and miseries but she was sustained by the love of a devoted mother and by the ties of motherhood

It was not suggested by the defence that if a murder had been committed another hand than the accused's had executed it. In reply to the usual plea—absence of motive—Mr. MATTHEWS for the Crown said "there never was an adequate motive in any case of murder, and from the point of view of right-minded people there never could be one." We will recite a few of the facts that pointed so strongly to DEVEREUX's guilt: 1. On Dec. 31st, 1904, he took a flat at Milton-avenue and requested the agent not to let the lower flat. The result of this was that he and his family had sole possession of the house. 2. On Jan. 28th he was making preparations for his boy STANLEY to go to a school. This was the last date upon which Mrs. GREGORY saw her daughter whom she had been accustomed to visit daily. DEVEREUX, whose animosity against his wife's mother was avowedly marked, knew that she was going to the country for some weeks. 3. To more than one individual he had spoken of the twin children as a burden to him. 4. On Jan. 13th, 1905, he sent a telegram in reply to an advertisement for an assistant druggist in these terms: "Would widower, aged 34, do? qualified; one child, six.—Devereux, 209, Shirland-road, N.W." On that date he was married and had three children. To counsel's question "And by March 22nd you were a widower with one surviving child, aged six?" he answered Yes. 5. After the death of his wife and twin children he sold their clothes, left London to live in the country, and placed his boy, aged six years, in a boarding school. In what way did DEVEREUX meet this damning testimony? He said the reason why he did not call in someone when he found his wife and children dead was: "I was frightened because I remembered the argument I had with my wife and because of the ill-feeling which my mother-in-law always bore me." Some circumstances associated with the "Trunk Tragedy" stand out in bold relief and signalise the event as one of the most remarkable of its kind ever chronicled. The fiendish callousness and measured way in which DEVEREUX by his own confession and testimony proceeded with his ghoulish task to place the bodies of his wife and children in the trunk and to secure them from detection by prolonged labours aided by the scientific knowledge which he possessed surpass all ordinary human understanding. The memory of the CROSSMAN case, he said, suggested the means of disposal of the remains but he determined not to bungle his work as CROSSMAN did. Having failed to effect his purpose by using zinc sheeting and soldering he covered the bodies with cloths and coated the latter with glue mixed with boric acid. Over all he placed a cover made of pieces of wood firmly fixed by screws and this again he coated with glue. In order to prevent any possible escape of effluvia he filled the keyhole of the lock with sealing wax. This hideous occupation extended over five or six days.

Counsel for the defence avowed that they were not prepared to argue that DEVEREUX was insane at the time of the tragedy nor that he was unfit to plead at the trial but they endeavoured to prove that from hereditary taint he might be expected to act in the extraordinary manner he did when, as he alleged, he found his wife and children dead. Except in a case of such extreme gravity the evidence tendered to the above end would not have been allowed by the Court, for technically it was inadmissible as germane to the issue. Although Mr. Justice RIDLEY indulgently yielded to counsel's appeal he nullified the effect in his summing up by asking the jury to dismiss the evidence as worthless since it was inapplicable. Briefly we may note that owing to the methods used by DEVEREUX it was possible to identify the features of the deceased ten weeks after death. Sir THOMAS STEVENSON succeeded in detecting, isolating, and weighing the morphine found in Mrs. DEVEREUX's body, recalling the HICKMAN case. It was calculated that at the time of death there were four grains in her system and that the liver contained nearly four times as much as the stomach, showing the extent to which absorption had occurred. There was no indication of

chloroform having been taken through the mouth. The exact means employed by DEVEREUX to administer the poison was not proved. Probably it was introduced into the milk consumed at tea-time if we can accept his statement that he went out after tea and returned to find his wife and children dead at about 8.30 P.M. As regards DEVEREUX'S criminal responsibility there can be no shadow of doubt. He is a cold, cruel, calculating murderer. His intellectual capacity is of no mean order. He did not even instance the "method of madness." The main features of his mental character are cunning, designing and remorseless villainy. The most that may be said in his favour is that he is a moral degenerate.

The Educative Factor in Hospital Life.

A PERFUNCTORY knowledge of the recruiting grounds from which the majority of hospital patients are drawn is sufficient to place the hospital in the front ranks of philanthropic endeavour and it is long since this view has been recognised. The great company of hand-to-mouth workers, the still larger army of regular hands with big families dependent upon their efforts, and above them the stratum of small tradesmen who can afford no higher fee than that which will tide them over the minor ills of life are all to be numbered among the natural inmates of every hospital. The physical benefits conferred upon these classes by the presence of these institutions are so obvious that such agencies as sermons, pamphlets, and bazaars have now become rather reminders than instructors of the public conscience. The hospital is the outpost of our national defence against degeneracy and the boon which is conferred by hospital ministrations upon every modern community is practically immeasurable if hospitals be rightly used.

While the supreme mission of every hospital is the alleviation of physical disability it is well to recognise certain secondary benefits. These may be difficult to appraise with any degree of accuracy but they are nevertheless perfectly real both in their existence and their influence, and the extent of that influence can be judged from many instances which come under direct observation. There is excellent evidence to justify the conclusion that as a social and humanising influence the hospital must rank very high and this aspect of its mission should be more considered than it is to-day. It is perhaps given to the lay observer, less engrossed in the physical if not more responsive to the moral and social welfare of the masses, to realise how beneficently the hospital may fulfil ends that are only indirectly comprised in the healing of the sick. To the layman every whit as much as to the physician or the surgeon the hospital should reveal itself as a school of morals no less than as a temple of healing, a dispensary of manners no less than of remedies, and infinitely more effective in these respects than any number of university extension lectures. For a sojourn in the ward of a hospital is in a very large proportion of cases the first real contact, in any true sense of the word, that many of its patients have had with a culture and refinement which they have hitherto regarded with indifference or even resentment. For a few days or weeks they are lifted, whether they will or not, into an atmosphere to which they have heretofore been aliens and regard themselves, their fellow sufferers, and the day's routine from a point of view that is wholly foreign to their experience. Too ill very often to be at first more than passively conscious of the change, with convalescence and returning strength their minds become tuned to this novel and more cultured environment. Their meals are served according to the principles of simple refinement; not according to the impossible dictates of luxury but after a fashion that might perfectly well be copied in their own little *ménages* at home. They see about them not an ostentatious pride in tidiness and cleanliness but a tacit admission of the necessity of these qualities and the sense of inferiority that accompanies their absence. Here the prized domestic virtues are no fruits of a weekly or yearly effort, but their exhibition forms the undisputed condition of every day and shows the patient that the primary elements of decency and comfort are within the reach of all. When once all this is perceived by the patient there comes a sense of the responsibility of each member of this little society towards the whole, a sense of personal obligation to conform to the general standard. And while this may at first be an effort, yet the satisfactory result is too obvious to escape even the bluntest perception. As a consequence of this it is not hard to see how in a very little while the whole hospital *régime*, which at first may have seemed so strange, will gradually resolve itself before the patient's eyes into a series of perfectly practicable details that with a very little trouble might be practised elsewhere. Again, the prevailing spirit of courtesy and self-restraint, of *bonhomie* under admittedly disagreeable conditions, and above all of an altruism that is not merely sentimental but perfectly healthy and largely unconscious, cannot fail to have a profound moral effect. That a few weeks of hospital life can overcome the crusted habits of years is, of course, too much to expect and experience proves the contrary. But that it may go further to undermine prejudice than many years of extraneous social endeavour is beyond doubt.

In the case of children especially the educative aspect of hospital life is very evident and many curious instances of a double code of morals, manners, and conversation existing side by side in the same child's mind may be observed in any large hospital. The more desirable one may not prevail—this, alas, is too often the case—but its presence, however fleeting, will not have been entirely wasted. The conditions of hospital life are largely artificial but at the same time it is not too optimistic to believe that some of them are applicable to many of the homes to which the patients return. And while the contrast must necessarily be extreme between the well-ordered routine of a large institution, with its rules and regulations and enlightened organisation, and the haphazard everyday domestic life of the patients, yet it is impossible to suppose that some relic of its message does not remain influential. Admitting this, it is only necessary to ponder for a little upon the vast society that a large hospital touches in order to realise the magnitude of its educative influence. Where in-patients are numbered by

annual thousands and out-patients by tens of thousands it is almost impossible to appreciate sufficiently the sum of its social work. A fuller conception of this side of hospital life should inevitably increase the sense of personal responsibility that rests upon all hospital workers—medical staff, students, and nurses.

The Social Instinct.

IN nearly every association which aims, directly or indirectly, at the improvement of its members, the social instinct is one which cannot be ignored. Associations may be formed for numerous purposes and they may have annual gatherings for the discussion of questions relating to the advancement of science or for the better regulation of matters concerning the ethical relations of their members but they succeed or they fail in direct proportion to the amount of friendly feeling which they encourage. This fact has lately been brought into prominence in the Presidential Address at the fifty-sixth annual session of the American Medical Association. The president, Dr. LEWIS S. MCMURTRY, discussed the origin, progress, and purpose of the Association and after reference to the annual gathering for the advancement of medical science and the elevation of the medical profession he spoke of the desire for improvement, for the increase of scientific resources and for the diffusion of medical knowledge which was evinced by every large gathering. Then came his happy remark upon the "social instinct" of our profession, "which would elevate and be elevated by interchange of views resulting from common experiences and by mingling together in pleasant friendly intercourse." The American Medical Association evidently labours under great disadvantages from the enormous area of the scope of its operations and it has struggled through the well-known difficulties of organisation as "a representative body composed of delegates from affiliated societies, colleges, and hospitals throughout the States." That the Association has grown and prospered during the half-century of its existence is shown by the proud statement that it is now the "largest medical organisation in the world." "It owns valuable property, has accumulated a considerable fund, and has a large annual income, all of which belongs to, and is subject to the control of, the members who, through their delegates, select the board of trustees to manage their funds." This is as satisfactory as can be desired but still the influence of the social instinct cannot be overlooked since this factor probably underlies many of the first beginnings of coöperation and association. At the annual gatherings matters of high moment may be discussed but at the ordinary meetings of the separate component parts of an association it may be doubted whether much interest is taken in medical politics, or even in the serious contributions to the advancement of medical science, for which outside help is so often desired. Local branches might almost be regarded as the separate constituencies which have the special function of electing delegates or representatives, who in turn have various important medico-political functions to perform. The local branches, however, would not long continue in existence if this remained their sole *raison d'être*. The members comprising local branches are not universally impelled by the ardent desire to advance science, either by their own contributions or by forming a receptive audience for the information to be derived from without. To explain their continued vitality we have to look for another mainspring and this appears to have been supplied by the reference to the "social instinct of our profession." There can be no doubt that social gatherings work for the ultimate good of all concerned. In nearly every district the struggle of competition is so great that relationships are liable to be strained and little misunderstandings are of frequent occurrence. It cannot be said that the public is innocent in the matter, since whenever medical topics arise some unfortunate yarn is apt to be told to the detriment of some practitioner and considerable self-restraint is frequently needed to prevent an abrupt challenge of an assertion or a demand for corroborative details. Libellous stories and injurious innuendoes may rankle so long as there are no opportunities for getting at the truth and many lamentable misunderstandings may be developed in the absence of some friendly common ground of meeting. Medical men who have the social instinct will probably discuss their little differences in an amicable fashion if they have the opportunity of meeting without the formality of a call demanding an explanation, and it is probable that by mingling "in pleasant friendly intercourse" not only are the mole-hills prevented from being made into mountains but they are perhaps smoothed away. Good fellowship is an essential in every association and it can be fostered by mutual knowledge.

At the annual meetings of the British Medical Association the social side is by no means the least conspicuous part of the gathering, and our columns this week recount many social meetings at which good fellowship was a prominent feature. This season of the year, when many medical men are taking a holiday, is one which is prone to give rise to difficulties in the matter of the treatment of one man's patient by a neighbouring practitioner. Occasionally it happens that when the holiday-maker returns his brother in the profession forgets to write or to mention that he has been called in as a substitute. If in such circumstances the two practitioners could meet at a dinner or some other social gathering it might be the means of promoting that *entente cordiale* which, desirable in every profession, is especially so amongst medical men.

Annotations.

"Ne quid nimis."

HAS THE TIME COME WHEN THE THAMES SHOULD BE ABANDONED AS A SOURCE OF WATER-SUPPLY?

No one can hold for a moment that the Thames is an ideal source of water-supply but it is a very grave indictment to say that the water at its best is diluted sewage. It is against the highest conceptions of public health that a river which serves as the channel for conveying the sewage of the metropolis away out of sight should be also the source of most of the water supplied to the metropolis for drinking purposes. It is, again, manifestly absurd that although the greatest precautions are taken to purify the water for such purposes yet a very large quantity of this purified water is

used to carry away the dejecta of the consumer. And matters are not likely to grow better, for the population is increasing, which means that while more water will be wanted the output of sewage will be greatly increased. The introduction of bacteriological processes for the disposal and complete destruction of sewage, it is true, promised results compatible with hygienic requirements; but, remarkably efficient in breaking down putrescible matters as the bacterial agencies appear to be, we have it on the greatest authority that there is no decisive evidence that these agencies will destroy pathogenic entities. It is admitted that London water drinkers are at the mercy of the filter-beds. If these should fail the chances of the outbreak of disease are great and a water-borne disease in London would be too terrible to contemplate, threatening the lives not of thousands but of millions. The evidence, however, that the water-supply of London has been accountable for disease is not convincing and we are not aware that any difference has been shown to exist as regards the prevalence of disease between those who drink water derived from the Thames and those who drink, say, the deep well waters of the Kent division supply. It may be that some day it will be possible to draw a sharp line of demarcation between the two sets of water drinkers by the fact of water-borne disease breaking out in one or the other, but it is devoutly to be hoped not. At all events there can be little doubt that the abandonment of a supply derived from a river which is admittedly used for the carriage of sewage in favour of the adoption of a supply from the pure and abundant watershed of Wales would inspire a feeling of considerable confidence amongst London water drinkers and would confer indisputable advantages also in many other directions. It should not be forgotten, moreover, that the acquirement of a fresh source of water-supply for the metropolis would mean not only a purer water for drinking purposes but a supplementary supply for ultimate discharge into the river which would augment the volume flowing to the sea and necessarily tend to keep it in a less contaminated condition. The subject has been approached recently by Dr. W. Scott Tebb, the public analyst of the metropolitan borough of Southwark, who, in a paper that has reached us, concludes:—

1. That five out of the seven commissions or committees of inquiry which have investigated the quality of the Thames water have condemned the river as a source of domestic supply to the metropolis.
2. That the quality of the water as indicated by the analyses has shown no substantial improvement during the last 30 years.
3. That the river and its tributaries are at the present time extensively polluted by sewage, sewage effluents, foul house refuse, and other obnoxious matters.
4. That it is doubtful if this excessive pollution can ever be prevented, especially in times of flood, from gaining access to the river.
5. That there is no reason to suppose that the poison of cholera or typhoid can be eliminated from drinking-water by any practicable process of purification such as filtration.

Serious as are these conclusions they are made all the more serious by the contemplation that the water areas of England and Wales are likely to be acquired by local provincial towns and that therefore year by year the prospect of gaining a new and adequate source of water-supply for London becomes less certain.

HOLIDAYS AND THE INFLUENCE OF SEASON.

WHEN the question of holidays is being discussed and where to spend them concern is commonly expressed as to whether the prospective place is bracing or relaxing. Other questions, as, for example, water-supply, drainage, and so forth, are apparently regarded as minor points compared with climatological considerations. It will be found as a rule that it is seldom that a consensus of opinion is gained as to what really is the climatological characteristic of a given place. Some will say that X—— is bracing and others that it is relaxing. One man goes to the west of England because he finds it bracing and another avoids it because he is sure it is relaxing and not the place for a "run-down" constitution; "the east coast is the only place for him." The fact is that the question of whether a place is relaxing or bracing depends largely upon the meteorological conditions which exist at the time when the holiday is taken. There are certain meteorological conditions which are more or less constant, as, for example, those arising from the nature of the subsoil, the trend of the country, or the level of the place. Such conditions, it may be presumed, exert a practically unchanging influence on the health, although these conditions may be profoundly modified by excessive rainfall or by the prevalence of wind. Rainfall is a fairly constant quantity in different health resorts; thus on the east coast it is relatively dry and on the west relatively wet. But we cannot reckon upon the wind in a similar way, for it is an ever variable factor: it may blow "great guns," it may hardly be present at all, and it may set in from any point of the compass. The direction of the wind has probably the greatest disturbing influence on the regular climate of a place and this accounts for the differences of opinion that are often expressed as to whether a health resort is bracing or relaxing. The fact is that it may be both. A warm westerly wind may easily prove relaxing even on the proverbially bracing east coast and conversely a stiff easterly or northerly wind on the west coast will soon wipe away any reproach as to its soft or relaxing character. When the force of the wind is tempered by a local barrier, such as mountains, its exhilarating character is, of course, diminished. The question, therefore, whether a health station is bracing or relaxing is largely decided by the direction and the prevalence of the wind, the climatological conditions varying as the wind blows from south, east, north, or west. It is chiefly when wind is absent altogether that local conditions exert their influence. The man who seeks invigoration and health will do well to avoid those places in which there is a tendency of the air to stagnate. He should be in a constant stream of pure air. Hippocrates in his 24 aphorisms gives evidence of his knowledge of the influence of season and amongst other things attributes to the various winds the following qualities. The south wind, he says, dulls the sense of hearing and sight, and causes headache, heaviness, and faintness; the north wind affects the chest and the throat, and causes constipation and dysuria. The south wind relaxes and the north wind contracts the tissues of the body. Again, "continued northerly winds brace and strengthen the body, make it agile, fresh-coloured, and quick of hearing. This wind restrains the bowels, increases pains in the chest, and offends the eyes. Southerly winds relax and moisten the body, dull the senses of hearing and sight, and cause heaviness, vertigo, laziness, and diarrhœa." To the question, then: Is a place relaxing or bracing? the logical answer would appear to be: It depends largely upon the direction and the prevalence of the wind, for the local influences of level, subsoil, and topographical surroundings may be much affected by this factor.

FAMILY DEGENERATION OF THE CORNEA.

IN the *Ophthalmoscope* for May Mr. Robert W. Doyne and Mr. Sydney Stephenson have described a remarkable series of cases of degeneration of the cornea which occurred in one family. The first patient was a boy, aged 12 years, who said that his eyes had been subject to periodical attacks of inflammation for about 12 months. The right cornea was more or less nebulous with curious-looking calcareous streaks and particles at the junction of the lower and middle third. The appearances suggested a transverse calcareous film at an early stage of development. There was a very faint more or less generalised opacity of the left cornea. But

the most striking opacity was a tongue-like process extending across the cornea for three-fourths of its area. The patient's father was a working carpenter, aged 48 years. At the age of 30 he suffered from "ulcers" of the left eye and after 12 months the sight was lost. He denied having had syphilis. The right eye was divergent and the central part of the cornea was covered with dense, whitish-grey, calcareous-looking particles so that the pupil was entirely hidden. The mother of this man suffered from "bad eyes" from youth and in adult life her sight was so poor that she had to be led about. She died at the age of 65 years. The remaining members of this generation included three sisters and one brother, of whom one sister suffered in a similar way. The carpenter had eight children. Of these, four, including the boy whose case was first described, were affected. One, a daughter, aged 24 years, began to suffer at the age of 16 or 17 years. On examination the corneæ were found cloudy but presented no signs of inflammation. But for certain facts the case might have passed for interstitial keratitis. In the right eye the iris could be only dimly seen through the milky cornea. The left cornea was still more opaque and the nebula showed a lattice-like arrangement, especially towards the centre. The second patient was a daughter, aged 22 years, whose eyes began to fail between the ages of 16 and 18 years. The corneæ were so milky that only indications of the underlying parts could be made out. The third patient was a girl, aged 15 years, whose eyes became affected at the age of seven. The sight became progressively worse without any symptoms of inflammation. The condition of the corneæ resembled that of the last patient but was not quite so bad. Thus in this family there occurred in three generations seven cases of bilateral slowly progressing degeneration of the cornea leading after several years to serious loss of sight. As a rule, there were no symptoms of inflammation. When there were they probably were due to erosions of the corneal epithelium which, as the result of the degenerative changes, was specially vulnerable. There was no evidence of syphilis nor were the parents consanguineous in either generation. Family degeneration of the cornea, though rare, is by no means unknown to systematic writers. Haab reported a case of what he called "lattice-like keratitis" in a boy, aged 16 years, whose maternal aunt and uncle were also affected. Dimmer recorded three cases of superficial lattice-like opacity of the cornea in two brothers and a sister, aged respectively 55, 49, and 51 years. Freund of Reichenberg in Bohemia has described seven cases in one family and eight in another which he traced through four generations. In this country Mr. R. Marcus Gunn has reported four cases of "keratitis nodosa" in a family and Mr. W. T. Holmes Spicer "nodular opacities" of the corneæ in a father and daughter. These conditions appeared to be examples of the disease now under consideration.

POST-GRADUATE STUDY AT THE UNIVERSITY OF CAMBRIDGE.

AT the commencement of the present long vacation—namely, in the beginning of July—a course of instruction for senior students, medical men, and veterinary surgeons, lasting for about four weeks, was opened in the medical school of the University of Cambridge. This course included (1) lectures and demonstrations on protozoa and protozoal diseases, by Dr. G. H. F. Nuttall; (2) lectures and demonstrations on pharmacology, by Mr. W. E. Dixon; and (3) lectures and demonstrations on general and special pathology, by Professor G. Sims Woodhead, Dr. H. E. Durham, Dr. W. Malden, and Dr. G. S. Graham Smith. The protozoal diseases which were treated of included amœbic dysentery, trypanosomiasis, sleeping sickness, kala-azar, coccidiosis, and malaria. The subjects of the pathological lectures and demonstrations comprised phagocytosis, Dr. A. E. Wright's "opsonins," toxins and antitoxins, venins and antivenins, methods of standardisation, the iodophil reaction in blood, illness due to unsound foods, diphtheria, agglutinins and agglutination methods, precipitins, and hæmolysins.

THE SODIUM SALTS OF THE COUMARIC ACIDS AS THERAPEUTIC AGENTS.

THE hypodermic application of sodium cinnamate in aqueous solutions (hetol) or dissolved in glycerine, which was referred to in a paper by Mr. Gilbert T. Morgan, D.Sc., F.I.C., in THE LANCET of July 12th, 1902, p. 66, still continues to receive considerable attention and among the more recent developments of the treatment based on the use of this therapeutic agent may be mentioned the serum obtained by the firm of Kalle and Co. of Biebrich-am-Rhein from tuberculous horses after repeated injections of the cinnamate. In a recent communication Dr. Morgan points out the interest bearing on the connexion between the chemical structure of cinnamic acid and its physiological action owing to the discovery that phenylpropiolic acid in the form of an aqueous solution of its sodium salt (thermiol) also has a marked action in the development of leucocytosis and can likewise be applied to the treatment of tuberculosis. Both these acids contain an unsaturated carbon chain attached to a benzene nucleus, the former acid having a double linking and the latter a treble bond. Since these substances are far more active physiologically than benzoic acid, $C_6H_5.CO_2H$, which does not contain the unsaturated group it may be assumed as a working hypothesis that this action is in some way connected with the presence in the molecule of the double or treble linking, this junction being known to be a point of great chemical reactivity. In the course of a series of clinical investigations carried out by Dr. G. Lovell Drage with the glycerinum sodii cinnamatis a demand arose for a drug having a more pronounced action and Dr. Morgan was thereby led to consider in what way the physiological activity of cinnamic acid might be enhanced. The employment of benzene derivatives as therapeutic agents has amply demonstrated the fact that the presence of an amino- (NH_2) or a hydroxy- (OH) group in the aromatic nucleus greatly increases the physiological action of the parent hydrocarbon and it therefore seemed likely that the use of a substituted cinnamic acid containing one of these groups might bring about the desired effect. Since the employment of amino-compounds of the antifebrin type is often attended by unpleasant secondary effects a hydroxy derivative was selected in the first place—namely, sodium ortho-coumarate, a substance having the structure of cinnamic acid with a hydroxyl (OH) substituent. Ortho-coumaric acid is somewhat similar in constitution to salicylic acid, these two acids standing in the same relationship to each other that cinnamic acid does to benzoic acid. This likeness to salicylic acid was also a determining factor in the choice of ortho-coumaric acid for medicinal purposes, bearing in mind the beneficial action of the salicylates in certain pathological conditions. For hypodermic injections a 22 per cent. aqueous solution of the sodium ortho-coumarate is prepared containing a slight excess of the free ortho-coumaric acid. The dichroic solution is quite limpid and stable, and as the salt is extremely soluble in cold water even a higher concentration may be employed if necessary. In all the cases hitherto studied the solution has induced a rapid physiological action, the leucocytosis being well marked and resembling that effected by the cinnamate. Experiments have also been instituted on the sodium salts of the two isomeric coumaric acids with the view of ascertaining whether the change in the relative positions of the active groups brings about any appreciable differences in their physiological effect. Sodium para-coumarate, prepared by the Perkin-Fittig

synthesis from para-hydroxy-benzaldehyde, is a much less soluble salt than the ortho-compound and accordingly an 8 per cent. aqueous solution was employed. The results obtained with equivalent quantities seemed to show that the action was of a similar nature but rather less intense than that produced by the ortho-salt. Sodium meta-coumarate, which was employed in 20 per cent. aqueous solution, had a very marked physiological action, being apparently even more active than the ortho-compound. The meta-coumaric acid required for this preparation was produced synthetically from meta-nitrobenz aldehyde. From a chemical point of view the action of the meta-acid is of special interest. It is well known that benzenoid ortho- and para-compounds in general often resemble one another in their chemical and physical properties whereas they frequently both differ markedly from their isomerides of the meta-series. In the case of the ortho- and para-coumaric acids the groups (OH) and (CH : CH . CO_2H) are in sympathetic positions and might accordingly be supposed to act conjointly but in the meta-compound these groups are in apathetic positions with respect to each other, so that the meta-acid might be expected to exhibit the dual properties of phenol and cinnamic acid, each substituent group producing its physiological effect to some extent independently. The three isomeric coumaric acids are certainly physiologically active but it must be left for further experiments to decide which of these is likely to prove to be the most serviceable therapeutic agent. The investigation is being extended to other compounds of a similar type and Dr. Morgan may be congratulated on the prospect opened up of being able possibly to correlate the physiological action of these substances with their chemical constitution.

A QUESTION OF ACCIDENT OR DESIGN.

AT Swansea an action has been tried recently by Mr. Justice Channell in which so remarkable a story was suggested on the part of the defence that it deserves to be recorded. The jury were unable to agree as to what had actually occurred and therefore, as the case may be tried again, comment would be out of place. The plaintiff sued for damages for the loss of both his legs, alleged to have been caused by the negligence of the defendants, the Taff Vale Railway Company. His story was that when travelling in a second-class carriage on the defendants' line he rose from his seat in order to place his umbrella in the rack. At that moment a jolt occurred which threw him against one of the doors and this being left unfastened permitted him to fall out upon the line where he somehow got into such a position that the train he had travelled in went over his legs, with the result that they had to be amputated. Presumably the negligence relied upon consisted in the door being open, not in the jolting, which must be natural to railway travelling and can hardly be sufficient to found an action for damages upon when a very unlooked-for result occurs. The railway company, however, denied that any jolting occurred at the place indicated, and incidentally further denied that the plaintiff was in the train at all. They called evidence to show that he was not one of the second-class passengers on the evening in question and said that he might easily have bought the ticket found on him and have walked along the line without being seen. They suggested that he actually did this and laid his legs across the line in order to secure compensation for the terrible injuries which must necessarily ensue. He had upon him when found copies of three papers which provide insurance coupons for their readers and had written his name on these. Under the terms of these coupons, however, it was pointed out, he would not be entitled to recover except in respect of an accident happening to the train itself in which he travelled and consequently, unless he had omitted to study the conditions laid down, the fact that he was thus insured could have no bearing on his conduct. The strongest evidence on behalf of the defendants was that of three medical witnesses, all of whom had seen him within various short periods after the accident, including one gentleman who saw him before his removal to the Cardiff Infirmary. Their testimony, briefly, was to the effect that they would have expected in the case of an accident such as the plaintiff described to find other serious injuries in addition to those to the legs, which, however, they had not done. Each leg, moreover, was crushed practically at the same point, so that at the time when the train passed he must have been lying with them crossing the nearest line at right angles, which medical witnesses considered to be an unlikely position in the alleged circumstances of accidental falling from the train. The first jury to hear the case has separated after vainly trying to come to an agreement upon the subject and it will be interesting to see whether a verdict is ultimately arrived at.

THE CLIMATE AND THERAPEUTIC INDICATIONS OF MEXICO.

IN a Consular Report of Mexico just published the statistical department of the Superior Board of Health gives some interesting records of the mortality from various diseases. In the city of Mexico diarrhœa in its various forms heads the list, with a total of 3720, nearly two-thirds of this number being children. Then come the diseases of the respiratory organs: pneumonia, 1229; pulmonary tuberculosis, 1125; bronchitis, 1002; and broncho-pneumonia, 688; making a grand total of 4044. Some of the other causes of death mentioned in the report of the Board of Health are as follows: organic diseases of the heart, 610; meningitis, 485; cerebral congestion and hæmorrhages, 365; infantile complaints, 473; cirrhosis of the liver, 631; other diseases of the liver, 320; diseases of the intestines and stomach, 257; accidents, 311; convulsions of children, 182; alcoholism, 194; typhus fever, 248; malaria, 102; measles, 97; scarlet fever, 33; and diphtheria, 42. The general idea of the Mexican climate (which in reality is a very varied one) leads us to expect a heavy mortality from diarrhœa and malarial conditions but it is rather surprising to note the high figure in respect of diseases of the respiratory organs. It may be partly accounted for, no doubt, by the number of visitors suffering from pulmonary tuberculosis who seek the climate of the higher table-lands in the hope of cure. The line of treatment adopted by the physicians is much the same as in other places—open air, good food, and abundance of sunshine being the chief methods employed. It is noticed, however, in the report that people, especially newcomers, in the high latitudes (Mexico city is 7500 feet above the sea) are particularly liable to catch "colds" and to find great difficulty in getting rid of them. The more experienced residents adopt the plan, directly they feel the symptoms of a cold, of leaving the city for Cuernavaca, Cuautla, Orizaba, Vera Cruz, and other places and find that on a lower level they very soon recover. It is difficult for the public to realise the effect of genuinely high altitudes on the breathing apparatus. The highest part of London (Hampstead Heath) is only about 360 feet above the sea-level and on the banks of the Thames, where thousands of London working men and their families congregate, the height above the sea is about 22 feet. The table-lands of Mexico vary from 5000 to 7000 feet above the sea, but when we have reached the summit of Snowdon (where no one lives) we have only attained an altitude of 3560 feet. Visitors to Mexico are recommended to wrap themselves up well before going out in the evenings, for even in a climate where all the products of the vegetable kingdom grow with luxuriant ease the night air is liable to sudden changes and disease comes swiftly. One of the best protections against it is to maintain the general system by taking plenty of nourishing

food, especially in the dry season, which is the most dangerous of the whole year. Tuberculosis, diarrhœa, and enteritis are said to be chiefly rife among the very poor. And, indeed, when we learn the primitive nature of the housing accommodation—the working classes for the most part being content with one room where the door does duty for both window and chimney and where neither water nor any sanitary arrangement exists—this is not surprising. Applying their habitations as a standard to the rest of the lives of the poor of Mexico it is no wonder that the officials of the Superior Board of Health and other physicians of the city state that the principal causes of the high rate of mortality are "bad food, bad water, and excessive drinking of pulque." "Pulque" is the national drink made from the juice of the agave or Mexican aloe, the vine of the ancient Aztecs. This plant grows in various forms very freely all over Mexico, and besides the juice, which is said to have been the ruin of many Indian tribes as well as of the white inhabitants of the country, large quantities of fibre used in the manufacture of twine, rope, and so on, are obtained from it. The best time to visit Mexico is in the winter months between September and March on account of the stringent quarantine regulations in the United States and Cuba. In this season the hurricanes which rage along the coast make the neighbourhood a terror to navigators but these same winds sweep the lower lands sloping down to the sea free from malaria and yellow fever which prevail in the hot season.

TREATMENT OF TUBERCULOUS ADENITIS BY THE X RAYS

IN *La Polyclinique* (Brussels) of June 15th M. Hendrix has published some very encouraging results from treatment of tuberculous adenitis with the x rays. A man, aged 50 years, had had for a year in the left supraclavicular fossa a tumour of the size of the fist consisting of an agglomeration of enlarged glands. It was fixed in its deep part but the skin was moveable over it and unaltered. It pressed on the brachial plexus, producing paresis and slight atrophy of the arm and hypoæsthesia of the fingers. The patient was in the early stages of tabes dorsalis and of tuberculosis of the apices of the lungs. Treatment with the x rays was commenced on May 25th, 1903, and was continued for three months. After the first application the glandular mass began to diminish. On August 22nd an unexplained phenomenon occurred: the tumour underwent a sort of gaseous degeneration. There was a sensation of crepitation and percussion gave a tympanitic note. On the following day this phenomenon had disappeared; there was no further trace of the tumour and the symptoms due to compression of the brachial plexus had disappeared. At the time of the report, two years later, the only trace of the tumour was a hard lump of the size of a small almond. The tabes dorsalis and the pulmonary tuberculosis persisted. In a second case the patient, a boy aged nine years, was seen on April 1st, 1905, with a large glandular mass extending along the right sterno-mastoid muscle from the mastoid process to the clavicle and penetrating so deeply that its lower limit could not be defined. It was multilobular and somewhat soft but the glands which composed it were hard and elastic. It was fixed to the deeper parts but the overlying skin was sound and moveable. After three days' treatment the result was surprising: the mass had disappeared and the glands could be rolled on one another. The latter diminished and after four weeks there was only one enlarged gland of the size of a hazel-nut. Eleven days later this had disappeared. In a third case the patient, a girl aged 18 years, had had for three years four enlarged glands varying in size from a hazel-nut to a large chestnut. They were hard and elastic, moveable, and without inflammatory reaction. The largest was situated at the angle of the jaw and was formed of conglomerated glands. Injection of tuberculin gave a positive result. Treatment with the x rays was begun eight days before the time of the report when the glands had already diminished. M. Hendrix finds that the action of the x rays is most rapid in cases when the glands are agglomerated into a mass. As illustrated above, the connecting material disappears in a few days and the glands can be rolled on one another. In a few weeks these diminish without altering in consistence. Then the smaller ones disappear entirely; the larger ones sometimes leave a sclerous nodule, a kind of cicatricial residue. M. Hendrix has never observed a relapse.

THE CHILDREN'S COUNTRY HOLIDAYS FUND.

THE Bishop of London sends us an appeal on behalf of the Children's Country Holidays Fund, an institution which is doing a work of far-reaching importance, inasmuch as the health of the poor children of London has a significant bearing on the physical well-being of the future toilers of our great metropolis. As his lordship points out, the poor children of London are unlike more fortunate boys and girls to whom the end of the school term brings days of health and enjoyment in the country or at the seaside, for the great majority of the 800,000 children in our London elementary schools spend their month of leisure in stuffy and overcrowded rooms or at play on glaring asphalt pavements. Even those who are strong are overcome by lassitude, while the delicate suffer terribly from the intense heat and the unceasing roar of traffic. To the poorest among these children the Children's Country Holidays Fund presents the opportunity of spending a fortnight amid country scenes with country hosts. Last year the public enabled the fund to send away over 39,000 children; this year still more are asking for the holiday. There are over 18,000 children waiting to go on August 10th and to pay for them the fund requires another £5000. The offices of the fund are at 18, Buckingham-street, Strand, W.C., the honorary treasurer is the Earl of Arran, and £1 1*s.* will send away two children for a fortnight. Few will fail to realise the good work which this fund is doing and we trust that the appeal will be liberally responded to

SENILE ALBUMINURIA.

THE *Boston Medical and Surgical Journal* of July 13th contains an important paper by Dr. A. E. Austin on a condition which is not generally recognised—senile albuminuria. In a paper with the paradoxical title, "The Advantages of a Trace of Albumin and a Few Tube Casts in the Urine of Certain Men above 50 Years of Age," which was noticed in our columns,[1] Professor W. Osler has described a form of albuminuria which he attributed to "pre-senile changes in the kidney the result of arterial degeneration causing a circulatory disturbance in the kidney." Dr. Austin in examining the urine of the aged paid attention to the form of albumin present, for the prevailing prostatic enlargement and consequent irritation cause nucleo-albumin and mucin to be present. The former on account of its solubility in strong acids cannot be mistaken for serum albumin in the cold nitric acid test but the latter forms a clear zone which, however, is at some distance from the acid. Dr. Austin always verified the presence of serum albumin by cooking with acid phosphate of sodium. He examined the urines of 45 men of ages varying from 64 to 95 years, the greater number being over 70 years. In 16 mucin alone was present as

[1] THE LANCET, Dec. 14th, 1901, p. 1690.

shown by the formation of "an upper ring." Of these 16 cases prostatic and seminal vesicle cells, amyloid bodies, and a few pus cells and blood corpuscles were present in nine, pelvic and renal cells and hyaline were present in one, and no concomitant condition could be discovered in four. In nine cases a typical ring showing only serum albumin was present. The amount varied from a mere trace to ¼ per cent. in one case and ½ per cent. in another. Associated with it in four cases were discrete pus corpuscles, much blood, and bladder and prostatic cells but no casts; in two cases pus, pelvic cells, and blood corpuscles were found in clumps; in three cases there were hyaline and granular casts. Thus three conditions could be distinguished—prostatic catarrh, mild pyelitis, and pyelonephritis. In ten cases both serum albumin and mucin were found; in most of these cases casts were found as well as the other bladder and prostatic cells. Thus the urine of 19 out of 45 old men contained albumin varying in amount from traces to considerable quantities. Yet these men were not ill and suffered only from the infirmities of age. Dr. Austin concludes that albuminuria is fairly frequent in old men, that mucinuria is more so, that both are associated with changes in the urinary tract, and that these changes are not of serious import. These facts are important because in ignorance of them the practitioner might readily diagnose Bright's disease and give a prognosis and follow a treatment not applicable to the case.

A CHECK UPON THE DISSEMINATION OF PULMONARY TUBERCULOSIS.

EVIDENCE is forthcoming that the Local Government Board is now seriously considering the spread of pulmonary tuberculosis among the poorer classes of society. It will be remembered that in April last a deputation of persons interested in the prophylaxis of this disease waited upon the Metropolitan Asylums Board to urge the advisability of the Board's undertaking the provision of sanatoriums. The managers of this Board, having asked for the views of the Local Government Board, have been informed that the latter body is obtaining information on the subject but is not yet in a position to express an opinion as to whether the managers should undertake the new duties suggested by the deputation. A communication addressed on July 3rd to the clerk to the Bath union shows, however, that the Local Government Board is moving to some extent in the direction desired by the memorialists, for it has decided that indoor paupers suffering from pulmonary tuberculosis with expectoration may be regarded as afflicted with an infectious disease within the meaning of Section 22 of the Poor-law Amendment Act, 1867, and may therefore be detained in a workhouse on a certificate by the workhouse medical officer until that officer shall furnish a further certificate to the effect that the patient can be discharged without danger to himself or to others. Much depends on the interpretation of this decision which medical officers accept as their guide but if compulsory detention is adopted in all the cases in which it would clearly be to the advantage of the patient and of those connected with him some special provision in the shape of infirmaries or sanatoriums will be rendered necessary.

THE Alvarenga Prize of the College of Physicians, Philadelphia, has been awarded to Dr. D. Chalmers Watson, Edinburgh, for an essay on "The Importance of Diet: an Experimental Study from a New Standpoint."

Sir Joseph Walton, one of His Majesty's Justices of the Supreme Court, has accepted the presidency of the Medico-Legal Society, in succession to Sir William J. Collins, the first President.

A VISIT TO JAMAICA IN MARCH AND APRIL, 1905.

BY THOMAS W. THURSFIELD, M.D. ABERD., F.R.C.P. LOND.,
PHYSICIAN TO THE WARNEFORD HOSPITAL, LEAMINGTON.

WITH a view of bringing to the notice of the medical profession the capabilities and advantages of the island of Jamaica as a winter resort for invalids and tourists Sir Alfred Jones, the managing director of Elder, Dempster and Co., some 12 months ago announced that he was willing to take a number of medical practitioners for a voyage to Jamaica and back in one of the magnificent steamers of the New Imperial Direct Mail Steam Line to the West Indies. I was fortunate in receiving an invitation and the following rough notes are, as far as they go, a record of a most enjoyable episode.

We sailed from Avonmouth, Bristol, on March 25th at 8 A.M., my cabin companion being Dr. Sidney A. Bontor of Great Berkhamsted. The ship we sailed in, the *Port Kingston* (twin screw), is 7000 tons burden and 10,000 h.p., with a speed of over 17 knots and is considered to be the best of the whole of the fleet of steamers engaged in the service. Voyages are much the same wherever one goes, but having seen many ships and made many voyages I never sailed on a more comfortable or better found vessel. Of her cleanliness, ventilation, and sanitary arrangements I cannot speak too highly, while the service was efficient, punctual, and willing. I am sure that the passengers would all join in my testimony to the merits of Captain Parsons and his officers.

On the ninth day out, after sailing through all the glories of the tropics, we made our first land—Turk's Island, one of the Bahamas—and on the next afternoon we arrived at Port Royal, Jamaica, of old piratical and infamous reputation, reaching Kingston just before dark after a splendid voyage of 4250 miles in a little more than ten days. As is always the case in the tropics, darkness came on quickly and before the formalities of the Custom House were completed it was dark. But having hired a buggy we drove five miles through what appeared to be a well-lighted, very populous, and rather dilapidated town to a hotel called the Hotel of the Constant Spring. It is situated at the bottom of the foothills of the Blue Mountain range, 600 feet above the town and in a beautiful garden park. It is also the terminus of one branch of an electric tram service which serves Kingston in an efficient and cheap manner. The hotel is large and well arranged and is owned and managed by the Elder Dempster Company. The water-supply, as the name of the hotel suggests, is regular and abundant. There is a fine swimming bath attached to the hotel, through which runs a stream of water coming directly from the mountains. There are a fine garden and park with tennis lawns, a cricket ground, and a fair golf course. The views of the mountains in one direction and of the city and the sea in the other are most striking, and altogether the visitor could not be better housed. One peculiarity of the island of Jamaica is the regular occurrence of the sea breeze and the land breeze. The sea breeze in fine weather begins about 10 A.M. and gradually strengthens until by noon it is really strong in the town and harbour. By 4 or 5 o'clock it begins to die away and by 6 o'clock it ceases. Somewhere about 8 o'clock a faint but pleasant breeze in the exactly opposite quarter arises, blowing off the mountains and the land towards the sea. These winds to some extent determine the architectural arrangements of the better class houses of the island. Houses are so built that both winds may blow through them, and the comfort that this affords in a hot climate is considerable—in fact, except when one is making considerable efforts or taking violent exercise one need never feel too hot in Jamaica. The Hotel of the Constant Spring is arranged carefully to catch these breezes and though the thermometer was sometimes over 85° F. I never once felt too hot in its cool breezy public rooms and corridors. Shortly after my arrival I was asked with my brother (who is well known in Jamaica and who went there with me for his fourth visit to the island) to stay with his Excellency the Governor at the King's House. There I stayed for three days in much comfort, being free to use and enjoy one of the most perfect gardens I ever saw, in which I made acquaintance with all

sorts of beautiful tropical plants and trees. Others have so fully and graphically described the flowers and the fruits of the tropics in general, and of Jamaica in particular, that I will not venture but I will give a general warning as to the consumption of fruit by visitors. Upon arrival they must be careful. The fruit is tempting to sight and taste and it is peculiarly so in a hot climate. Visitors should take it sparingly at first and in the morning rather than at any other time and should see that it is ripe and fresh.

The city of Kingston (about 35,000 inhabitants) is not beautiful as a city but in many ways it is interesting and there are many institutions in it well worth a visit. Locomotion is easy and cheap owing to the electric tram service. There is a good club to which visitors can belong upon easy terms if properly introduced. There is a small garrison of white troops, and, as a matter of course, the usual sports and games of our officers follow, such as races and polo. Kingston is the seat of government of the island and the centre of its commerce. The residences of the officials and of the commercial magnates are in and around the city and no words of mine can sufficiently acknowledge the unbounded hospitality I received everywhere in Jamaica but especially in Kingston. Everyone wished to do their utmost to please and to entertain and each one vied with the other until the guest was compelled to make a choice of being half-killed by kindness or of risking offence in the defence of his poor self.

Some days after my arrival I joined an expedition to Newcastle, a military station for the white troops about 4500 feet above the sea and in the Blue Mountains. We went partly by tram and partly in carriages, but for the greater part of the distance we rode ponies, and on our way we stopped to inspect a coffee plantation and saw the whole process from the flower to the dried seed or bean constituting the coffee bran of commerce. We were informed that the Blue Mountain coffee was the best in the world, but unhappily, like the famous British infantry, there is very little of it. I am told that this coffee is so good that very little gets into retail commerce in the pure state as it is used to bring up the quality of lower grades by being mixed with them. Be this as it may, I can say that the coffee prepared from it is very good indeed. The views from Newcastle are superb and the ride through the various forests is most interesting. As to the ponies they are marvellous; I am sure they could climb stairs and am not sure that ladders would be beyond their talents. We spent a long day among these mountains and got home by 8 P.M. The temperature at Newcastle was between 60° and 70° F. One of the officers in charge of this sanatorium for white troops described Newcastle as being a one blanket place in the summer and a two or three blanket place in the winter months.

Later I had a most delightful excursion to the other side of the island to a beautiful plantation called Cape Clear. We partly drove and partly walked and partly went by railway. We stuck in a river and had to get out and wade, but all our trouble was repaid by a most hospitable welcome at the hands of our friends on the plantation. There we met a picked assembly of some of the largest planters of the island and were introduced to the mysteries and methods of banana cultivation. Returning by rail to a station called Bog Walk we drove down a magnificent pass, one of the show drives of the island, along the Rio Cobre, a river which is made to operate the whole electric force of Kingston, whether for tramways or for lighting, and arrived at the ancient capital of the colony—Spanish Town. Here there are several objects of interest—among others a fine monument to Rodney, the saviour of the West Indies, a title earned by his victory over the French fleet under Admiral Comte de Grasse.

Jamaica as a health resort can start by boasting a good statistical record. The population of the island as estimated by the Government officials at the end of the year 1904 was 797,528. Of this number about 20,000 are supposed to be white. The death-rate for the whole island is low; in 1904 it was 24·2 per 1000 and in 1902–03 it was as low as 19·8. For the past ten years the island death-rate has averaged 21·45 per 1000. The death-rate of Kingston is higher, being 29·7 in 1903–04. The birth-rate of the whole island in the same year was 39·9 per 1000, a very satisfactory contrast to the death-rate. One of the principal causes of death is pulmonary tuberculosis, while the mortality from cancer is very small in comparison with our home statistics. I had the advantage of a long conversation with Dr. M. Grabham, one of the best known physicians in the colony, whose work upon the mosquitoes of Jamaica has brought him well-deserved recognition and fame. He told me that there were very few endemic diseases in the island and none to which visitors were usually liable supposing common precautions are taken. Simple continued fever after undue exposure or fatigue is readily met by rest and care; typhoid fever is not at all common; pulmonary tuberculosis is rather common but is nearly always of the acute type; dysentery is uncommon; yellow fever is very uncommon and always under complete control; and leprosy is rapidly declining. There is an island fever of a malarial type which attacks residents who have to live and work in swampy places; it is probably mosquito-borne but it is not severe when properly managed and is unknown at elevations above 2000 feet. The water-supply of Jamaica is good and plentiful but for drinking purposes water should always be boiled, especially at the beginning of the rainy season, unless its sources are absolutely guarded and cleansed, for there are many squatters in the hills, so that it is not easy to be absolutely sure of the purity of any supply. Kingston has a good water-supply and its drainage system is good, the effluent being carried right out to sea outside the coral reefs. From these facts and figures it will be gathered that Jamaica is a very healthy tropical country and that with due precautions it is eminently suited for the reception of visitors who may with very ordinary care enjoy a glorious climate, magnificent scenery, and new sensations with little or no risk to their own health, less, in fact, than they would run on the Riviera or in Egypt. As to climate, the general temperature during the best months of the year—namely, December, January, February, and March—is about 80° F. in the shade, cooling down some 5° to 7° in the night. It rarely reaches 90° and, except in the mountains, does not go below 75°. There are two rainy seasons, one in May and one in October, the latter being much the longest and most severe, but there are, as Jamaica is so mountainous, rain storms at all times. During my short visit I was never inconvenienced by the heat and never once kept awake by a hot night. In the middle of the day it is generally very hot and the heat of the sun is very striking but then one must remember the latitude of Jamaica, 17½° N., and take the usual tropical precautions.

And now as to the class of invalids who may be recommended to winter in Jamaica with advantage to their health. First, then, I should consider, and in this I am borne out by the local practitioners, that there are very few phthisical patients who would get any advantage whatever by a residence in Jamaica. The climate is too enervating for the majority of such cases and, moreover, the arrangements are more suited for strong and active people than for invalids who must take and receive every advantage they can get. I can conceive that in the very initial stage of picked cases much good might be done, but the place would only be suitable for a few months of the year. For advanced cases of pulmonary tuberculosis Jamaica is altogether unsuitable. This is almost indicated by the fact that pulmonary tuberculosis when it occurs in the native population generally progresses in a most rapid way. On the other hand, patients who suffer from bronchitis and winter cough and nearly all cases of chronic rheumatism are greatly benefited by a winter in Jamaica, while certain forms of kidney disease are much relieved. Rheumatism and kidney disease are very rare among the native-born inhabitants, white and black.

Jamaica is often spoken of by the inhabitants of the other West India islands and of Demerara as the very healthiest spot in the West Indies and it has been used for generations as the sanatorium for the other places, yet the neglect of common precautions at one time made this healthy spot into a white man's grave for the troops stationed there. Now the application of ordinary scientific laws and common-sense precautions has made Jamaica one of the healthiest of our foreign stations. The really frightful mortality which used to occur is gone and instead we have merely a low average death-rate, better a good deal than in some quarters held in much higher estimation as to health. Invalids and, indeed, anyone going to reside in Jamaica for even a short period should take certain precautions and avoid certain imprudences. As to clothing, it should be of the lightest wool or silk next the skin and the very lightest external clothes either flannel or cotton. The head should be well protected and a well-ventilated helmet of pith or other light material should be worn when much exposed to the sun. With light clothing and a well-protected head no one will be incommoded by the heat in Jamaica. As to diet, I have already mentioned that

all newcomers to the tropics should be very careful of the fruit when first they arrive. It is cool, luscious, and tempting, but after a long voyage, during which the digestive organs may have been upset, it is very apt to disagree. It is well to eat sparingly of meat and rather to eat sparingly altogether upon first arrival. There are so many and such a variety of tempting dishes that this is rather a counsel of perfection but it is nevertheless a wise precaution. What to drink is a matter of taste and habit but I may record that the almost universal beverage beyond tea and coffee is whisky and soda-water with ice. The various fruits are compounded into most delicious iced squashes and I cannot but believe that the less alcohol consumed by anyone the more fit and healthy that person will be. It is not well for newcomers to expose themselves too much to the sun without protection but the absolute terror which some people have of this luminary is very amusing and very unreasonable; a white umbrella is useful and necessary indeed to those who either suffer from or fear the sun. True insolatio (heat apoplexy, or real sunstroke) is practically unknown in the island and the commonest precautions will avert any evil consequences of exposure to the sun. It is as well to be careful in the evening of the land breeze, chills from this delicious wind while sitting at dinner being frequent. It is well to wear under evening clothes something round the loins like the woven apparatus that is called a cholera belt; this can be procured everywhere.

To sum up a panegyric, it seems to me that for anyone who has leisure and desires to see perhaps the most beautiful island in the tropics and at the same time by a pleasant and not too long a voyage to escape the miseries of an English winter and early spring, there is no place like Jamaica. For the sufferer from chronic rheumatism or gout or from incipient kidney trouble there is no better winter resort. For the idlers tired of the Riviera, Algiers, Madeira, or the Canary Islands there can be no better new sensation. While for the busy professional or business man who can give himself a month's holiday in glorious scenery and in the most delightful climate there can be no more attractive excursion. The directors of the Elder Dempster Line of Direct Imperial Mail Steamers have done great things in their endeavours to meet the reasonable wants of people going to this island. The two principal hotels have been bought, reorganised, and refurnished by them and they have made them, with a few trivial exceptions, not only comfortable but really sanitary. The steamers of the line are known to be some of the best found and most luxuriously fitted and worked of any ocean steamboats.

There are drawbacks, of course, to life in Jamaica and first among them I should place mosquitoes. But mosquitoes are not generally numerous, though they abound in certain districts. It is no doubt wise to sleep under mosquito nets; it is not considered to be necessary to take this precaution all the year but as it is now proved beyond doubt that mosquitos are the bearers of much, and much fatal, disease it is well to take every step to avoid their bites. The joint work of Principal Theobald and Dr. Grabham on "The Mosquitoes of Jamaica" is a monument of painstaking inquiry and the curious in such matters will do well to get it. Another insect plague of the island is ticks, said to have been introduced by some South American cattle. These little torments swarm everywhere and it is not safe to go off a beaten road on foot unless wearing high boots or leather gaiters. There is a curious story told about the upsetting of the balance of animal existence in connexion with rats, ticks, snakes (which are now extinct in Jamaica), and mongooses. There *were* once snakes in Jamaica, though I understand they were not very numerous. There were also rats which were extremely numerous. In order to keep the rats and snakes down the mongoose was imported from the East. This brave little beast soon completely cleared the island of snakes and it so harried the rats that in order to save themselves the rats took to the trees to live in and there they changed their diet and became egg-eaters and bird-destroyers. This state of things so reduced the number of birds that the cattle ticks increased and multiplied until they became the nuisance that they are, while now the ticks are said to be destroying the mongooses, getting inside their ears, whence the mongooses cannot evict them. Meantime the mongoose, deprived of its natural diet of snakes and rats, has taken to chickens, so that it in turn has become a felonious nuisance. I suspect this sequence of events may not bear strict investigation but it was repeatedly told to me as I have set it down.

The profuse and general hospitality of the island made our sojourn pass all too quickly. But at 4 o'clock on the tenth day of our stay we started to return with a very full complement of passengers. Of the incidents of the passage it is not necessary to say much. On the ninth day we made the coast of Ireland in the neighbourhood of Bantry Bay. The day was fine and clear and a more beautiful sight I never saw. The next day we arrived early in the morning at Avonmouth in the midst of a cold wet fog, a truly British welcome making us all long for the light and sun of the West Indies. The general impression made on me by the voyage was that the endeavour to make Jamaica a resort for tourists and certain classes of invalids ought to be a very great success and I believe it will. I have personally to thank Sir Alfred Jones and the Elder Dempster Company for a most thoroughly enjoyable and satisfactory holiday, all too short in duration.

Leamington.

FOUNDER'S DAY AT EPSOM COLLEGE.

FOUNDER'S DAY was celebrated at Epsom College on July 29th, special interest being attached to the day's proceedings in consequence of its being the jubilee Founder's Day and owing to the opening of the Holman art and reading room which has been erected by subscription to commemorate the work done for the profession by Sir Constantine Holman, the treasurer of the College.

The proceedings commenced with a short service in the College chapel at 2.45 P.M., after which the visitors went to the big schoolroom to witness the distribution of prizes. Amongst those on the platform were Sir William H. Broadbent, Bart., who gave away the chief prizes; Sir William S. Church, Bart., chairman of the council; Sir Constantine Holman, Mr. J. Paul Bush, C.M.G., Dr. F. de Havilland Hall, Dr. John H. Galton, Mr. John H. Morgan, Dr. Frederick Needham, Mr. H. W. Kialimark, and Dr. Guthrie Rankin.

The HEAD MASTER reviewed the scholastic work of the past year and referred to the various educational successes. He reported that all the teaching arrangements had been recently reviewed by inspectors under the Joint Universities Board, the result of which was generally satisfactory. As a consequence the Army Council had granted to the College the privilege of sending in candidates for leaving certificates admitting to the army competitive examination. A large number of boys were about to go into camp at Aldershot, and Epsom College was doing its best to carry out Lord Roberts's suggestion in regard to compulsory rifle training in schools. In conclusion he thanked the numerous distinguished visitors for coming amongst them and in referring to the treasurer, Sir Constantine Holman, he observed that he had worked entirely for others and no one could have higher praise than that.

At the conclusion of the distribution of prizes Sir WILLIAM BROADBENT gave an excellent address to the boys, reminding them that there were long distance runners as well as sprinters, and that pluck and perseverance were as essential as speed. Those boys who had taken prizes had also taken responsibilities, for they had given hostages for maintaining the high standard which they had already attained. After speaking of the importance of the public school spirit and of its value in after life, he concluded by reminding the boys that success and happiness were not convertible terms.

Sir WILLIAM CHURCH moved a hearty vote of thanks to Sir William Broadbent for his kindness in attending that day, and drew attention to the great interest which he had taken for many years in the work of the British Medical Benevolent Fund.

The proposition was seconded by Dr. NEEDHAM and carried with acclamation.

The visitors then proceeded to the Holman art and reading room, and as the gathering was far too large to be accommodated inside the addresses were made from the steps of the building.

Dr. GALTON, who initiated the Holman testimonial fund, in asking Sir William Broadbent to declare the building open, referred to the great services which Sir Constantine Holman had for so many years rendered to the various benevolent agencies of the profession, more especially to the Surrey Medical Benevolent Society and

to Epsom College. It was mainly through his efforts that the title of the institution had been altered, and one proof of his hard work existed in the fact that he had collected a sum of £7000 for the benevolent work of the College. He stated that the room had been erected primarily for the boys' recreation but the teaching of art would be allowed in it.

The room was then declared open by Sir WILLIAM BROADBENT who referred to the numerous honours which had recently been conferred upon Sir Constantine Holman. In reference to the change in the name of the College he was glad to be able to say that the funds of the benevolent side of the institution had not suffered from the loss of contributions.

The visitors then proceeded to inspect the room, the swimming bath, and the other College buildings, after which they adjourned to the grounds where refreshments were served whilst a band played. A special attraction provided was a gymnastic display in the grounds under the direction of Sergeant Tancred, which was excellently performed and was greatly appreciated by the parents and friends of the boys. It is interesting to note that there are not more than two boys in each house who are unable to swim two lengths of the recently enlarged swimming bath.

THE BROMPTON HOSPITAL SANATORIUM AND CONVALESCENT HOME AT HEATHERSIDE, CAMBERLEY.

IN THE LANCET of June 25th, 1904, we published a brief account of this institution shortly before it was formally opened by H.R.H. the Prince of Wales. We have recently paid a second visit to the sanatorium in order to see it in working order. About 50 patients are now under treatment and it is intended to open the remaining beds as soon as possible.

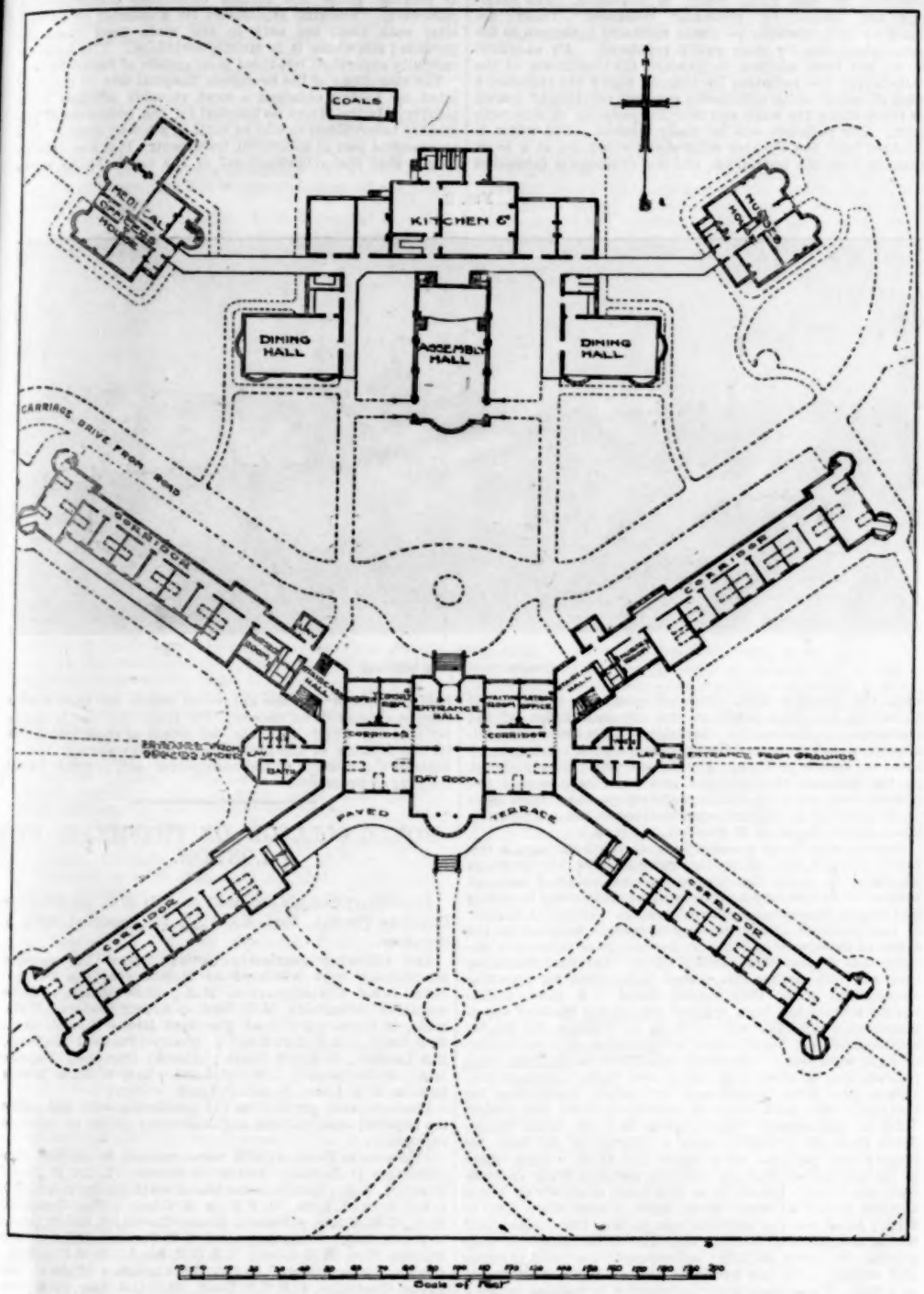
In erecting the buildings the committee of the Brompton Hospital had three objects in view. First, to submit early cases of pulmonary tuberculosis to open-air treatment in a dry and bracing climate for several months with a view to obtain arrest of the lung disease. Secondly, to educate a large number of patients in the system of hygienic or open-air treatment, so that having learnt these principles they may return to their own homes and become centres of instruction to others. Thirdly, to provide a convalescent home for other patients who have been treated in the parent institution. A few weeks in the fine air of Heatherside under medical supervision will, it is hoped, restore such patients sufficiently to enable them to resume suitable employment. After a careful examination of the buildings and appliances and after personal inquiries and observation we feel sure that the sanatorium and the system of treatment which is adopted will in every way amply carry out the above intentions.

The buildings stand on the Chobham Ridges, Surrey, 400 feet above sea level, about 30 miles from London, two miles from Frimley station, and three miles from Camberley. The surrounding region was known of old as Bagshot Heath and the Chobham Ridges border the large tract of uninclosed moorland belonging to the public, over which the War Office has acquired certain rights for military purposes.

The sanatorium grounds face for the most part south and command a fine view over Frimley Common, Farnborough, and Aldershot. A distant horizon is thus obtained. This is a matter of some importance. A limited horizon is likely to have a depressing effect on patients confined to bed or to their rooms from any cause, whilst a fine view of distant country produces an opposite effect. Except on the south the grounds are surrounded by the pine woods of the Heatherside estate. In the 20 acres belonging to the institution are to be found specimens of numerous varieties of pine, in addition to the pinus sylvestris. Numerous seats have been placed amongst the trees for the benefit of the patients who thus pass a large portion of their time in an atmosphere impregnated with the aroma of the pines. These woods afford an excellent shelter to the sanatorium from north and east winds and give needful shade in summer. The soil is gravel and sand and belongs to the Upper Bagshot series. The meteorological observations taken in the district show a dry sunny climate of a bracing character. The mean rainfall is 23 inches, the number of rainy days 183, the relative humidity 82·8 per cent., and the amount of cloud 7·4 per cent. The mean annual temperature is 48·6° F., the mean maximum 57·1°, and the minimum 40·5°, with a range of 16·2°. The buildings were designed by Mr. Edwin T. Hall, vice-president of the Royal Institute of British Architects, who has adopted an entirely novel and original design. As will be seen by the plan it consists of detached blocks and provides accommodation for 100 patients. (Fig. 1.) The main building has a central block and four radial pavilions. In the centre are the day rooms, facing south, yielding most pleasant shelter when their use is permitted by the medical superintendent. Access to these rooms is carefully regulated so that patients may only enter them at certain prescribed hours. In this portion of the building, also, are the consulting room, dispensary, matron's rooms and board room. There are also in this block four wards (two on each floor) containing three beds each. These are intended for patients who require special observation. Each of the radial pavilions is two-storeyed and contains accommodation for 22 patients in 12 wards holding one bed each, two wards containing two beds, and two containing three beds. Each floor is entirely disconnected from the other. All the rooms intended for the patients face S., SSE., or SSW., and behind are corridors, the windows of which are arranged opposite the doors of the wards, so that a perfectly free and ample current of air is provided for each room. The wings are placed at such angles that the front ones do not interfere in any way with the back ones and the latter receive as much sunshine and fresh air as the former. It will be observed on the plan that if a line be drawn at right angles from the patients' bedroom nearest the angle in the back wing it will (if extended) pass clear of the front wing, so that patients lying in bed in that room will have a full view of the country beyond. The object in adopting the radial form was to obtain the minimum distance between the centre of the building and the wards in the extremity of each wing. This is of obvious advantage in facilitating the nursing and feeding of those patients who may be confined to bed for a longer or shorter time. This form was an original idea on the part of the architect and has proved quite satisfactory. The size of a single bed ward is 12 × 11 × 10 feet or a cube of over 1300 feet. Considering the free entrance and egress of air this size is ample. There is no advantage in having these small wards higher than ten feet; a greater height would merely add to the cost of building without compensating advantages. The windows are made to reach to the ceilings and terminate by fanlights which are made to open at an angle of 90°. The doors to the rooms are provided with similar fanlights. All the wards in the pavilions are shallow so that the direct rays of the sun can reach the backs of the rooms. This cannot happen when the wards are made deep so as to contain many beds. The glass of the windows is carried down to within a foot of the floor. The lower storey is so arranged that patients in bed can be wheeled out on to the terrace, so as to be under the full influence of the sunshine and fresh air. As a matter of fact, nearly all the patients prefer to have their beds on the terrace at night also so as to sleep in the open air, and are only driven in by the stress of weather. Open balconies are formed at the end of each pavilion. The lower wards are provided with sun-blinds. Between each pair of pavilions is a detached sanitary tower containing the bath-rooms, lavatories, closets, sink-room, &c. To afford additional safety in case of fire, in addition to the main staircases there is a fire-escape staircase at the end of each pavilion, and further two of the pavilions are cut off from the rest of the block by a corridor built of fire-resisting material with a glass roof.

To the north, and quite detached from the main building, is a large hall which is intended as a recreation room. It is admirably lighted and ventilated. A dining room for the patients is situated on each side of the hall, communicating with the kitchens by covered ways. The kitchens and accessory departments are arranged in a manner which considerably aids in the working of the department. At the east and west extremities of this portion of the buildings are respectively the residences for the medical officers and the nurses' home. At some distance from the sanatorium and near the main road is the machinery block, containing the boiler and engine houses, the laundry, the

FIG. 1.



Ground Plan of the Camberley Sanatorium.

electric plant, the mortuary, and the laboratory. The institution is lighted by electricity, generated on the premises, all the plant being in duplicate. The buildings are heated by hot-water radiators. These are found to be preferable to steam radiators inasmuch as the temperature can be more easily regulated. An excellent device has been adopted to preserve the cleanliness of the walls above the radiators by placing above the radiators a sheet of metal which effectually prevents currents of heated air rising along the walls and carrying particles of dust with them. The radiators can be easily cleaned. The water is obtained from the Frimley waterworks which are at a short distance from the institution, and the drainage is connected with the Frimley main drainage scheme. A successful endeavour has been made in the external design of the sanatorium to obviate the character usually associated with a hospital and to secure the appearance of a large country home or seaside pavilion. The mental effect thus produced on the patients of brightness and homeliness assists the general treatment. A building erected on the austere lines of barracks or an old-fashioned workhouse has a depressing effect which ought to be avoided. (Fig. 2.)

FIG. 2.

General view of the building.

Passing now from a description of the buildings, a few words may be said as to the general lines of treatment adopted. In order that the educational value of such an institution as this may be fully utilised great stress is rightly laid on a daily routine rigidly adhered to. To keep a number of male patients idle for the several months required for the arrest of the disease and the commencement of reparative processes has a most demoralising effect. Enforced relaxation from all work during this period unfits them for resuming employment when they return home. A most praiseworthy scheme has been mapped out by the medical superintendent which may well serve as an example for similar establishments. Each patient is required to do some amount of light work daily. The daily routine is as follows. The patients rise at seven and take a cold bath. An ingenious system has been established by which scrambling for the use of the bath-rooms is entirely avoided and perfect order is maintained. Breakfast is at 8.15; work out-of-doors from 10 to 10.45; then a quarter of an hour for lunch; the patients work again till 11.55. Then there is an interval of absolute rest, the patients lying on their beds till 12.45. Dinner is at this hour, after which comes another period of rest. More work follows from 2.50 to 4.15. After tea the patients can go into the rooms where tables are provided so that they can write letters or play games. Supper is at 7.15; subsequently the reading rooms and concert room are available and all lights must be out at 9 P.M. The lowest grade of exercise is walking round a "measured mile" at a slow pace. If the temperature is not raised by such a procedure then light work, such as carrying baskets containing gravel, mould, &c., is enforced and subsequently work requiring more exertion is allowed, such as making paths and certain operations connected with gardening. Smoking is allowed for a quarter of an hour after each meal but only on the main road inside the grounds; elsewhere it is strictly forbidden. The meals are carefully supervised but there is no system of forced feeding.

The committee of the Brompton Hospital may be congratulated on having obtained a most valuable addition to its charity. In the future no hospital for the treatment of pulmonary tuberculosis should be built in a town; country air is an essential part of successful treatment. It is also acknowledged that the neighbourhood of the sea is by no means requisite but a site the nature of which we have already suggested should be chosen. We trust that funds will be forthcoming which will free the minds of those responsible for the working of the institution from any anxiety, both as regards the upkeep of the sanatorium and of the parent hospital at Brompton.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary Comitia was held on July 27th, Sir RICHARD DOUGLAS POWELL, Bart, K.C.V.O., the President, being in the chair.

The following gentlemen having passed the required examination were admitted as Members of the College: John Brian Christopherson, M.A., M.D. Cantab.; Lewis Augustus Clutterbuck, M.B. Durh.; Arthur Frederick Hertz, M.A., M.B. Oxon.; Conrad Meredyth Hinds Howell, M.A., M.B. Oxon., L.R.C.P. Lond.; Henry Percival Johnson, B.A. Cantab., L.R.C.P. Lond.; Harold Campbell Parsons, M.A., M.D. Toronto, L.R.C.P. Lond.; and William Morton Robson, M.D. Lond., L.R.C.P. Lond.

Licences were granted to 111 gentlemen who had passed the required examinations and conformed to the by-laws and regulations.

Diplomas in Public Health were granted to the following gentlemen: Jackson Arthur Atkinson, L.R.C.P. Lond., M.R.C.S. Eng.; Robert James Blackham (Captain, R.A.M.C.), L.R.C.P. & S. Edin., L.F.P. & S. Glasg.; Niel Campbell, M.B., C.M. Glasg.; Herbert Ernest Corbin, L.R.C.P. Lond., M.R.C.S. Eng.; Louis Courtauld, B.C. Cantab., L.S.A.; John William Fox, M.B. Lond., L.R.C.P. Lond., M.R.C.S. Eng.; James Alison Glover, M.D., B.S. Cantab.; Walter Lisle Taylor Goodridge, L.R.C.P. Lond., M.R.C.S. Eng.; Hermann Lauder Hamilton, M.B., B.S. Aberd.; Edwin Charles Hayes (Captain, R.A.M.C.), L.R.C.P. & S. Edin., L.F.P. & S. Glasg.;

Henry Holt, M.B., B.S. Vict.; Percy Samuel Lelean (Captain R.A.M.C.), F.R.C.S. Eng., L.R.C.P. Lond.; Norman Forbes MacLeod, M.B., B.S. Glasg.; James Meek (Major, R.A.M.C.), M.D., M.S., R.U.I.; John William Myler, F.R.C.S. Eng., L.R.C.P. Lond., M.D. Brux.; John Nightingale, M.D., M.S. Edin.; James Farquharson Powell, L.R.C.P. Lond., M.R.C.S. Eng.; John Elliott Robinson, L.R.C.P. Lond., M.R.C.S. Eng.; and Eugene Dunbar Townroe, L.R.C.P. Lond., M.R.C.S. Eng.

The PRESIDENT announced that the report of the plague committee had been presented to the Secretary of State for India and that the plague committee had been invited to wait upon him, when he expressed his gratitude to the Royal College of Physicians of London and announced his intention of forwarding the recommendations of the plague committee to India.

The PRESIDENT nominated Dr. G. R. Murray to deliver the Bradshaw lecture on Nov. 7th, the subject being Exophthalmic Goitre and its Treatment; and Dr. Norman Moore to deliver the two Fitzpatrick lectures on Nov. 9th and 14th—Lecture I. On John Mirfield (1393) and Medical Study in London during the Middle Ages; and Lecture II. On Dr. Edgar Browne (1644–1708) and the Education of Physicians in London in the Seventeenth Century.

The following communications were received:—

1. From the Clerk of the Privy Council (July 7th) inclosing a programme of an International Congress on Physio-Therapeutics to be held at Liége on August 12th next, and stating that if the College appointed a representative the Lord President would recommend him for credentials as a British delegate. The PRESIDENT nominated Dr. H. Lewis Jones as the representative of the College.

2. From the secretary of the Royal College of Surgeons of England reporting certain proceedings of its Council on July 13th.

3. From the chaplain of Bethlem Hospital asking leave to photograph the portraits in possession of the College of the Doctors Monro who were successively physicians to the hospital.

4. From Messrs. Hutchinson and Co., publishers, asking leave to reproduce, in a life of Queen Henrietta Maria by Miss Ida A. Taylor, the portrait of Sir Theodore Mayerne in possession of the College. In both cases leave was granted, subject to the reservation that the reproduction should be used for the purpose asked only.

On the nomination of the PRESIDENT and Council the following appointments were made:—Censors: Dr. Joseph Frank Payne, Dr. Norman Moore, Dr. Frederick Taylor, and Sir Thomas Barlow. Treasurer: Sir Dyce Duckworth. Emeritus registrar: Sir Henry Alfred Pitman. Registrar: Dr. Edward Liveing. Harveian librarian: Dr. Payne. Assistant registrar: Dr. Oswald Auchinleck Browne. Elected members of the Library Committee: Dr. Philip Frank, Dr. Norman Moore, Dr. Archibald Edward Garrod, and Dr. Humphry Davy Rolleston. Curators of the museum: Dr. Henry Charlton Bastian, Dr. William Cayley, Dr. Seymour John Sharkey, and Dr. John Abercrombie. Finance committee: Dr. F. de Haviland Hall, Dr. David Bridge Lees, and Sir Edwin Cooper Perry. Examiners: chemistry and chemical physics—Mr. John Millar Thomson, F.R.S., Mr. Frederick Thomas Trouton, F.R.S., Mr. Frederick Daniel Chattaway, Ph.D., D.Sc., and Mr. John Addyman Gardner, F.C.S., F.I.C.; materia medica and pharmacy—Dr. Cyril Ogle, Dr. John Henry Bryant, Dr. Joseph John Perkins, Dr. Francis Whittaker Tunnicliffe, and Dr. James Purves Stewart; physiology—Dr. Ernest Henry Starling, Dr. Bertram Louis Abrahams, and Dr. Leonard Erskine Hill; anatomy—Dr. Peter Thompson and Dr. Robert Howden; medical anatomy and principles and practice of medicine—Dr. F. de Havilland Hall, Dr. Samuel Hatch West, Dr. Theodore Dyke Acland, Dr. George Newton Pitt, Dr. William Collier, Dr. Hubert Montague Murray, Dr. Norman Dalton, Dr. Frederick John Smith, Dr. Walter Essex Wynter, and Dr. John Rose Bradford; midwifery and diseases peculiar to women—Dr. Francis Henry Champneys, Dr. John Phillips, Dr. Edward Malins, Dr. William John Gow, and Dr. Thomas Watts Eden; public health—(Part I.) Dr. Arthur Pearson Luff and (Part II.) Dr. William Heaton Hamer.

Captain Leonard Rogers, I.M.S., elected a Fellow on April 27th last, being resident in Calcutta, was admitted *in absentiâ* and the seal of the College was set to his diploma.

Reports were received from Dr. C. Theodore Williams on a visit which he paid as representative of the College to the new buildings of the University of Birmingham, and from Dr. Frederick T. Roberts on his attendance as representative of the College at a Court of Governors of the University of Sheffield. In both cases they were thanked on the motion of the PRESIDENT.

Two reports, dated June 19th and July 10th, were received from the Committee of Management, recommending: (1) that the South African College, Cape Town, be added to the list of institutions recognised by the Examining Board in England for instruction in chemistry, physics, and biology; (2) that the University of Leeds be added to the list of universities whose examinations are accepted under the conditions of Paragraph II. Section III. of the Regulations in lieu of the First and Second Examinations of this Board; and (3) that Uppingham School, which has been visited by a member of the committee and reported as fulfilling the requirements of the Board, be added to the list of institutions recognised by the Examining Board in England for instruction in chemistry, physics, and biology. These reports were adopted.

The quarterly report of the College finance committee, the annual report of the library committee, the annual report of curators of the museum, and the report of the examiners for the licence on the results of the April examinations were received and adopted.

Books and other publications presented to the library were received and the thanks of the College were returned to the donors. Among them may be mentioned a first edition of Celsus' "De Medicinæ," given by Professor W. Osler, and some interesting books and papers from Miss Greenhill and Dr. W. H. Allchin.

The newly elected officers, examiners, and members of standing committees gave their faith to the College.

The PRESIDENT then dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the council was held on July 27th, Mr. JOHN TWEEDY, the President, being in the chair.

It was resolved that diplomas of Membership should be issued to 103 successful candidates and that, jointly with the Royal College of Physicians of London, diplomas in public health should be issued to 19 successful candidates.

On the recommendation of the museum committee it was decided to purchase two additional tables for the display of anatomical specimens in the museum.

A report from the finance committee was received and approved. The chief points in the report are as follows:—The gross income of the College amounted to £25,755, being £1214 less than in the previous collegiate year; the expenditure of the College amounted to £23,025 or £1149 less than the expenditure of the previous year, therefore the balance of income over expenditure amounts to £2780 and is only £64 less than the balance last year.

Mr. Henry Morris was re-elected a member of the executive committee of the Imperial Cancer Research Fund.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8609 births and 4490 deaths were registered during the week ending July 29th. The annual rate of mortality in these towns, which had been 11·6, 12·9, and 13·4 per 1000 in the three preceding weeks, further rose last week to 15·0 per 1000. In London the death-rate was 14·3 per 1000, while it averaged 15·3 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 3·1 in Burton-on-Trent, 4·2 in Willesden, 4·5 in King's Norton, 5·9 in Ipswich and in Handsworth (Staffs), 6·2 in Hastings, 6·3 in Walthamstow, 6·4 in Croydon, and 6·7 in Tottenham; the highest rates were 20·0 in Salford, 21·7 in Stockport, 22·1 in Manchester, 22·3 in Rochdale, 22·6 in Hanley and in Sheffield, 23·7 in Liverpool, 24·0 in Merthyr Tydfil, 24·6 in Rhondda, and 30·7 in Bootle. The 4490 deaths in these towns last week included 1101 which were referred to the principal infectious diseases, against 388, 486, and 612 in the three preceding weeks; of these 1101 deaths, 861 resulted from

diarrhœa, 82 from whooping-cough, 77 from measles, 33 from diphtheria, 26 from scarlet fever, 21 from "fever" (principally enteric), and one from small-pox. No death from any of these diseases was registered last week in Hornsey, Hastings, Bournemouth, Ipswich, Burton-on-Trent, King's Norton, or Tynemouth; while the highest death-rates from the principal infectious diseases were recorded in West Ham, Aston Manor, Stockport, Liverpool, Bootle, Barrow-in-Furness, Sheffield, Rhondda, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in Wolverhampton, Barrow-in-Furness, and Sunderland; from scarlet fever in Bootle; from diphtheria in Barrow-in-Furness; from "fever" in Devonport; and from diarrhœa in West Ham, Aston Manor, Stockport, Birkenhead, Liverpool, Bootle, Sheffield, Rhondda, and Merthyr Tydfil. The mortality from whooping-cough showed no marked excess in any of the large towns. One fatal case of small-pox was registered in Derby but none in any other of the 76 towns. The number of small-pox cases remaining under treatment in the Metropolitan Asylums Hospitals, which had been five, four, and three at the end of the three preceding weeks, was again three at the end of last week; no new cases were admitted during the week, against two, two, and none in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on Saturday last, July 29th, was 2550, against 2499, 2520, and 2485 on the three preceding Saturdays; 352 new cases were admitted during the week, against 354, 356, and 304 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 90, 104, and 117 in the three preceding weeks, declined to 116 last week, and were two below the number in the corresponding period of last year. The causes of 48, or 1·1 per cent., of the deaths in the 76 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Salford, Newcastle-on-Tyne, and in 45 other smaller towns; while the largest proportions of uncertified deaths were registered in Birmingham, Rochdale, Burnley, Preston, Bradford, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 14·7, 14·3, and 15·2 per 1000 in the three preceding weeks, further rose to 15·3 per 1000 during the week ending July 29th, and was 0·3 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 10·9 in Leith and 11·2 in Aberdeen to 19·1 in Dundee and 21·3 in Perth. The 513 deaths in these towns last week included 39 which were referred to diarrhœa, 14 to whooping-cough, eight to measles, and five to diphtheria, but not any to small-pox, to scarlet fever, or to "fever." In all 66 deaths resulted from these principal infectious diseases last week, against 57, 55, and 61 in the three preceding weeks. These 66 deaths were equal to an annual rate of 2·0 per 1000, which was 1·7 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 13, seven, and 22 in the three preceding weeks, further rose last week to 39, of which 20 occurred in Glasgow, six in Edinburgh, six in Dundee, and five in Paisley. The deaths from whooping-cough, which had been 26, 25, and 12 in the three preceding weeks, rose again to 14 last week, and included four in Glasgow and two each in Edinburgh, Dundee, Aberdeen, Greenock, and Perth. The fatal cases of measles, which had been 14, 19, and 21 in the three preceding weeks, declined again last week to eight, of which five were registered in Glasgow and three in Perth. The deaths from diphtheria, which had been three, one, and three in the three preceding weeks, further rose to five last week and included four in Edinburgh. The deaths referred to diseases of the respiratory organs in these towns, which had been 65, 65, and 62 in the three preceding weeks, rose again last week to 70, and were 15 in excess of the number in the corresponding period of last year. The causes of 13, or nearly 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 16·9, 19·7, and 20·1 per 1000 in the three preceding weeks, further rose to 20·8 per 1000 during the week ending July 29th. During the past four weeks the death-rate has averaged 19·4 per 1000, the rates during the same period being 12·5 in London and 16·1 in Edinburgh. The 151 deaths of persons belonging to Dublin registered during the week under notice were five in excess of the number in the preceding week and included 22 which were referred to the principal infectious diseases, against eight, 17, and 20 in the three preceding weeks; of these, 20 resulted from diarrhœa, one from measles, and one from "fever," but not any from small-pox, from scarlet fever, from diphtheria, or from whooping-cough. These 22 deaths were equal to an annual rate of 3·0 per 1000, the mean rates last week from the principal infectious diseases being 2·9 in London and 1·9 in Edinburgh. The fatal cases of diarrhœa, which had been six, 14, and 16 in the three preceding weeks, further rose last week to 20. The 151 deaths in Dublin last week included 51 of children under one year of age and 29 of persons aged 60 years and upwards; the deaths of infants exceeded the number in the preceding week, while those of elderly persons showed a slight decline. Six inquest cases and four deaths from violence were registered; and 51, or more than a third, of the deaths occurred in public institutions. The causes of six, or nearly 4 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeons: A. F. Harper to the *Dominion*, on commissioning; C. J. Mansfield to the *Racer*, for Osborne College; H. F. Iliewicz to R.N. Engineer College, Devonport; R. E. Biddulph to the *Cressy*; and F. J. Burns to the *Bacchante*, on recommissioning. Staff Surgeons: S. Conner to the *Cormorant* for Gibraltar Hospital; R. Hill to the *Renown*: P. H. M. Star to the *Roxburgh*, on commissioning; and T. W. Philip to the *Nelson*, on the *Roxburgh* commissioning. Surgeons: A. F. Fleming to the *Dominion*, on completing; A. B. Marsh to the *Hindustan*, on completing; F. F. Mahon to the *Excellent*; C. Shepherd to the *Pioneer*; and R. Waterfield to the *Colossus*, on the *Roxburgh* commissioning.

ROYAL ARMY MEDICAL CORPS.

Lieutenant H. W. Long to be Captain (dated May 19th, 1905).

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant-Colonel W. L. Stewart having resigned his commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers (dated August 2nd, 1905). Surgeon-Captain W. A. Griffiths having resigned his commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers (dated August 2nd, 1905). Surgeon-Captain H. P. Job having resigned his commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers (dated July 29th, 1905). Surgeon-Major W. J. Harnett having resigned his commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers (dated July 29th, 1905).

VOLUNTEER OFFICERS' DECORATION.

The King has conferred the Volunteer Officers' Decoration upon the undermentioned officers of the Volunteer Force, who have been duly recommended for the same under the terms of the Royal Warrant (dated July 25th, 1892):—*Eastern Command: Rifle:* 2nd Volunteer Battalion the Queen's Own (Royal West Kent Regiment): Surgeon-Lieutenant-Colonel Henry William Roberts. *Medical Corps:* East Surrey Bearer Company, Royal Army Medical Corps (Volunteers): Major John James de Zouche Marshall. *Scottish Command: Rifle:* 1st Volunteer Battalion the Royal Scots Fusiliers: Surgeon-Lieutenant-Colonel William Sneddon. 1st (Ross Highland) Volunteer Battalion, Seaforth Highlanders (Ross-shire Buffs, the Duke of Albany's): Surgeon-Lieutenant-Colonel John Adam. *Volunteer Rifle Corps:* 5th (Glasgow Highland) Volunteer Battalion, the Highland Light Infantry: Surgeon-Major Angus Macphee. *Northern Command: Artillery:* 1st Lancashire Royal Garrison Artillery (Volunteers): Surgeon-Major Thomas Moore Dawson. *Rifle:* 2nd Volunteer Battalion the East Lancashire

Regiment: Surgeon-Lieutenant-Colonel Andrew Alexander Watson.

EXAMINATION FOR COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS.

The undermentioned gentlemen, 17 of whom possess university degrees, were successful at the recent examination in London for commissions in the Royal Army Medical Corps for which 60 candidates entered:—

Names.	Marks.	Names.	Marks.
John Allan Anderson ...	582	Percy Farrant	479
Cuthbert Garrard Browne	577	Albert Edward Francis Hastings	479
Hugh Godwin Sherren ...	568	George William Webb Ware	474
Henry Horsce Andrews Emerson	560	Michael Balfour Hutchison Ritchie ...	473
Wallace Benson	549	James Stuart Dunne ...	470
Rowland Philip Lewis ...	548	William McConaghy ...	466
George Edward Ferguson	543	Francis Cornelius Sampson	461
James Herries Graham ...	538	Charles Francis White ...	461
Charles Ernest White Spinner Fawcett	529	Cecil John Wyatt	453
Thomas Scatchard	519	Wilfrid Cowan Nimmo ...	450
Ronald Anderson Bryden	502	Edmund Thurlow Potts	448
Arthur Edmund Stewart Irvine	499	Michael Keane	445
Thomas Bettesworth Moriarty	499	Arthur Drought O'Carroll	445
Alexander Macgregor Rose	499	Robertson Stewart Smyth	441
Edward Lawton Moss ...	497	Arthur James Arch ...	439
Edward Guy Anthonisz...	495	Thomas Somers Blackwell	439
Griffith Henry Rees ...	495	Harold Edgar Priestley...	439
Vivian Hood Symons ...	484	Alan Cuncliffe Vidal ...	426
Walter John Weston ...	482	Philip Jauvrin Marett ...	425
Mortimer John Cromie...	480	Hugh Stewart	423

INDIAN MEDICAL SERVICE EXAMINATION.

The following gentlemen, eight of whom possess university degrees, were successful at the examination for admission to the Indian Medical Service held on July 25th and four following days:—

Names.	Marks.	Names.	Marks.
C. E. Palmer	3407	W. D. Wright	3164
C. H. Reinhold	3395	V. N. Whitamore	3158
A. F. Hayden	3348	J. F. Boyd...	3150
R. E. M. Newland	3303	N. S. Sodhi	3081
E. J. C. McDonald... ...	3278	J. Catto	3064
L. A. H. Lack	3273	W. C. Gray	3041
K. W. Mackenzie	3187	W. J. Powell	3034

Forty-two candidates (27 of whom had university degrees) competed for the 14 vacancies.

THE WAR IN THE FAR EAST.

The *Russkoe Slovo* states that the late commander-in-chief of the Manchurian army, General Kuropatkin, having proposed that the members of the staff of the provincial detachments should be decorated, the members of the medical profession and the field surgeons opposed the idea. Since then the new commander-in-chief, General Linievitch, raised the proposal again expressing his wish that medical men, field surgeons, and sisters of mercy belonging to the provincial sanitary detachments working south of Gundzhulin should be rewarded. His proposal has met with the same reception as that of his predecessor, for the major portion of the provincial sanitary and medical men insist that the only reward for what they may do must be consciousness of duty done.

Surgeon-General Sir Benjamin Franklin, K.C.I.E., I.M.S., has been appointed a Knight of Grace of the Order of St. John of Jerusalem in England.

Correspondence.

"Audi alteram partem."

THE CAUSE OF SENILE DECAY.

To the Editors of THE LANCET.

SIRS,—Under a perfect system one would expect man right to the end of his mortal career to grow in strength and wisdom, passing from higher plane to higher plane. But it has been ordained that, having reached his zenith, he shall slowly retrograde and with ever-waning powers totter to the grave. What, I would ask, are the pathological—or, as I would prefer to say, "physiological"—causes of this senility? Does the organism wear out like any other piece of machinery? Or are we to suppose that with advancing years its energies become spent, as in a piece of clockwork slowly running down? Or, again, can we explain the phenomena of senility simply as being part of a vital cycle, the cellular elements of the tissues tending, through inherent proclivities impressed upon them by heredity, to pass through a definite cycle of which senile decay is the final phase?

A little consideration will show that we cannot in any of these ways fully explain the occurrence of senile decay. If this were simply a process of wearing out it should surely start with the beginning of active life, whereas, as a matter of fact, it is precisely during the active early years of life, when on this view wear and tear should be greatest, that the tissues, far from wearing out, actually improve in structure. It is, moreover, impossible thus to explain the varying ages at which senility makes its appearance in different species. A dog, e.g., becomes senile at an age when the human is not yet half mature and it is barely conceivable that the cells of this animal should have an inherent tendency to wear out long before those of man have reached maturity. No, the animal organism does not wear out like a tin pot or a pair of boots. The view that senility is due to an exhaustion of vital energy may be at once dismissed, founded as it is on an altogether false analogy, for in the matter of energy there is no real analogy between a living organism and an inanimate machine. Finally, the assumption that the tissues become senile owing to an inherent tendency determined by heredity does not explain those remarkable cases of premature senility in which the hair turns grey, the skin wrinkles, and the arteries become brittle before the normal age of puberty has been reached. It cannot seriously be contended that such cases are due to an innate tendency for the individual cells of the body to become prematurely senile: there must be some coördinating mechanism at work.

We cannot, I repeat, fully explain the phenomena of senility in any of the ways suggested. A much more probable explanation is that the organism in large measure brings about its own senility—that, in fact, it deliberately and of set purpose commits slow suicide with the object of limiting its existence, the limit thus imposed being definite for each species and one most conducive to the welfare of the species, and that the self-destroying instrument strikes chiefly through the blood plasma. In considering the causation of senile decay we must think of the organism as made up of a number of cells—nerve cells, muscle cells, gland cells, and the rest. Now it is evident that the senility of the organism as a whole is due to the senility of its constituent cells, and the contention is that these latter become senile not so much from causes resident in themselves as because with advancing years the plasma environing them alters in composition, and by virtue of this altered composition—as well as alterations in respect of the plasmic circulation—sets on foot that gradual dissolution of cell organisation which characterises old age.

If the various cells of the body were at shortly recurring intervals replaced by new descendants it is clear that the tissues would retain their youth throughout life but, as a matter of fact, the more highly organised cells, such as those of nerve, muscle, and (most) glands, cannot give birth to new cells; those originally laid down in embryo last for the lifetime of the individual and thus have ample time for "growing old." Now, though doubtless there is an inherent tendency for all cells ultimately to become senile, it is probable that they have also a tendency to immortality. I cannot but think that the fate of the tissue cells, both in respect of development and decay, is less dependent upon unaided developmental proclivity and more upon environmental influences than we are wont to suppose. Certainly the growth and development of the individual are largely due to specific influences operating through the blood plasma, influences which come into operation in definite sequences and *compel* the tissues to grow and develop along certain lines. Thus, if the thyroid gland fails to yield its proper secretion cretinism results; if the blood is bereft of a substance yielded by the pancreas the individual does not pass beyond the infantile stage of existence; and, again, in the absence of ovaries and testes the developmental changes characteristic of puberty do not take place.

But if this is true of growth and development why should it not also be true of decay? In point of fact I believe it is, and that if the tissues were to continue throughout life to be flushed with healthy juvenile blood they would retain to extreme age much of their youthful nutritional vigour; and contrariwise, that if the tissues of the child were fed with senile blood (as actually happens, I would suggest, in cases

of premature senility) they would forthwith tend to undergo senile degeneration. On this view a man grows old because his blood grows old, the organism being slowly destroyed by means of the blood plasma.

We do not yet know the nature of the changes which the blood undergoes with advancing years but we may be quite sure that they are of a definite kind and that the age of the individual is written as plainly in his blood as in his tissues. I believe it will be found that modifications in respect of internal secretions figure largely in these changes. We have seen that the internal secretions play an important part in determining growth and development and my own observations lead me to believe that normal senile degeneration is largely brought about in the same way. But the blood of the aged also undergoes other changes. It tends to get poor in quality, to be deficient in hæmoglobin and foodstuffs, and to contain an excess of excretory material, while from failure in the circulatory system its supply is apt to be defective. These are all additional factors in bringing about senile decay and as they are, to some extent, under our control we have it so far in our power to retard that decay. More than this we can scarcely hope to do until we possess a more intimate knowledge of the composition of senile blood, and it is doubtful whether even this knowledge would enable us to do much to lengthen man's days. The most effective way of doing this would be to allow only those belonging to long-lived families to propagate the race. In this way the span of life might be extended almost indefinitely.

Metchnikoff's contention that senility is in great measure due to the absorption of poisons from the large bowel is, in my belief, untenable. Were it true the individual ought to begin to get senile immediately after birth, whereas under normal conditions no senile changes occur during the years of developmental life, or, indeed, for some time afterwards. The fact is that senility does not begin until the senile-producing mechanisms come into play. The assumption that the human large bowel is wholly redundant gives nature the credit for being a bungler indeed. Can anyone seriously maintain that a child coming into the world with his ileum terminating at the anus would develop into a more vigorous being, enjoy better health, and live longer than if he had been endowed with the normal length of digestive tube?

I am, Sirs, yours faithfully,

Wimpole-street, July 23rd, 1905. HARRY CAMPBELL.

THE INCREASE OF CANCER AND THE USE OF ALCOHOL.

To the Editors of THE LANCET.

SIRS,—In a leading article in a recent issue of THE LANCET you refer to the discussion by the Life Assurance Medical Officers' Association of the problems of cancer mortality. May I ask space for some further comments on a subject of such engrossing interest? As regards the increase of cancer, real or apparent, it is doubtless scientifically right to treat this as still *sub judice*. The Imperial Cancer Research Fund will, I hope, soon announce its conclusions. In the meantime, to the plain man the evidence strongly points to the reality of the increase, and it will be wise to accept this as a fact for practical purposes. When the deaths from any disease in both sexes increase during a long course of years, so that the rates of mortality calculated upon them with all known precautions against fallacy and allowance for change in age distribution of the population show an increase, uniform, progressive, and considerable, the plain man will believe that the increase in the fatality of that disease is a real one. When a general tendency to increase is also reported from other registering countries, including our colonies, continuous in the case of most countries, "fluctuating but progressive" in Ireland, the Netherlands, and New Zealand,[1] this conclusion is strengthened. An augmentation in the course of 30 years of 147 per cent. for males and of 74 per cent. for females in the corrected mortality-rate of cancer[2] is not readily to be explained by improved diagnosis and certification. The last year for which returns have been published (1903) confirms the tale. There is a substantial increase in the corrected mortality from cancer upon the average of the five preceding years in both sexes and in both urban and rural counties. The rates for 1903 are the highest on record.[3] Surgical procedure has during the past 30 years greatly advanced, many more lives of cancer patients have been saved, and very many more have been lengthened. This should have diminished the mortality. The onus of proof lies, I think, heavy on those who would deny the reality of the increase. Until wholly new evidence has been produced we shall do well to accept Dr. J. F. Payne's masterly summing up of the question[4] and to act upon the conclusion that we have to deal in medical practice to-day with the momentous fact of an actual and progressive increase of cancer in the community at large.

Your article alludes to the relation of the use of alcohol to cancer. It was venturesome on my part to raise this question before the Life Assurance Medical Officers' Association because it is so easily misunderstood. Any primary causal relationship between the use of alcohol and cancer is out of the question. Teetotallers are by no means exempt from the disease. But the use or abuse of alcohol may nevertheless have a secondary influence. There are grounds for a suspicion that this is the case. Let me state a hypothesis. I shall be unable to prove its truth but I can state *primâ facie* evidence of its probability. "The extended use of alcohol during the past half century has promoted the occurrence of cancer of the digestive tract and has thus been one cause of the increased mortality from cancer."

A brief outline of the evidence is as follows: 1. "56 per cent. of the total mortality from cancer is due to carcinoma of the digestive organs."[5] The progressive increase in the cancer death-rate has been especially noticeable in cancer of these organs. Dr. Payne establishes this from the Reports of the Registrars-General for England and Wales (1868 to 1888) and for Ireland (1870 to 1897), and from statistics of St. Thomas's Hospital.[6] Dr. W. S. Lazarus-Barlow and Dr. Gordon Taylor found the same fact in those of the Middlesex and St. George's Hospital.[7] Personal clinical experience confirms this. Mr. Rutherford Morison, surgeon to the Royal Infirmary, Newcastle-upon-Tyne, writes in THE LANCET of June 17th: "So far as my own experience goes, the increase is largely in cases of cancer of the gastro-intestinal tract." 2. The consumption of alcohol has much increased during the last 50 years, coincident with the greater prosperity of the people. 3. Occupations associated with the free use of alcohol show a high liability to cancer. This is proved by the statistics of occupation mortality from cancer given by the Registrar-General (1881–1890) and quoted by Dr. Payne, in which he shows that commercial travellers, inn servants, innkeepers, and brewers die from cancer at rates from 30 to 50 per cent. above the average of occupied males. 4. There is reason to think that persons who abstain from alcohol have an average lower death-rate from cancer than those who take alcohol. Dr. A. Newsholme's statistics[8] on this head, to which you allude, comprise three years' cancer mortality amongst assured male lives in the United Kingdom Temperance and General Provident Institution. He found that the cancer death-rate of the abstainers from alcohol, calculated upon the lives at risk and adapted to a "standard million" of population, was 72 per cent. of the death-rate of non-abstainers. Two things have to be noted here. One is that the figures are small—47 deaths of abstainers and 78 of non-abstainers registered as due to malignant disease. Another fact is that the death-rate of abstainers from all causes in that institution follows the same course as the cancer death-rate, being less than that of non-abstainers in almost exactly the same proportion. The difference may, again, be caused by the presence of a few intemperate persons amongst those who take alcohol. 5. There is an impression derived from clinical experience that free alcohol-drinkers are especially liable to cancer of the digestive organs. It is difficult to submit evidence of this. Some figures which I placed before the Life Assurance Medical Officers' Association are of this nature but they are too small to be conclusive. They were taken from carefully verified life assurance records and formed part of mostly consecutive series of 2000 deaths from all causes. There were 114 males dying from malignant disease. I divided them into three groups: 41

[1] Registrar-General's returns, England and Wales, 1903, p. xxxviii.
[2] Dr. J. F. W. Tatham, THE LANCET, March 15th, 1902, p. 745.
[3] Returns cited, p. lxiii.
[4] THE LANCET, Sept. 16th, 1899, p. 765, and elsewhere.
[5] Dr. Payne, THE LANCET, April 5th, 1902, p. 968.
[6] THE LANCET, Sept. 16th, 1899, p. 768.
[7] Transactions of the Life Assurance Medical Officers' Association, 1905, p. 155.
[8] Brit. Med. Jour., 1903, vol. ii., p. 1529.

abstainers, 29 uncertain, and 44 users of alcohol. The disease was located in the alimentary tract in 34 per cent. of the abstainers, in 48 per cent. of the uncertain class, and in 64 per cent. of the drinkers. Thus in those who took alcohol (and a few of these would probably be intemperate) the digestive tract proved to be much more often the site of the disease than in those who abstained.

It will be conceded that the hypothesis that the extended use of alcohol has increased the number of cases of cancer of the alimentary tract would explain the facts that I have put forward. Nor is it difficult to believe that the continual application of alcohol to the digestive canal, producing as it does congestion of its lining membrane, would promote any existing tendency to that localised cell-proliferation which is an essential feature of malignant growth. No one, however, is more ready than myself to admit that this is only a hypothesis. Reasonable hypotheses, however, are valuable, since, as Sir William R. Gowers remarks, even when they prove erroneous their disproof always involves addition to our knowledge. I hope that fuller observations will be made by those who have the opportunity of doing so. Reverting to the phenomenon of cancer increase, if we glance back to the early part of last century we see three chronic diseases acting as scourges of civilised man—tubercle, cancer, and syphilis. Of tubercle we have learnt much since then both as to its nature and remedy. Cod-liver oil was introduced into Britain by Dr. Hughes Bennett in 1841, Koch discovered the bacillus in 1882, and the open-air treatment has been developed of recent years. We can now often cure and, what is better, prevent, and in consequence the tubercle death-rate has greatly fallen. The nature and course of syphilis have been demonstrated by a long line of illustrious men. The discovery and use of the alkaline iodides and the definition of the place of mercury in treatment, especially by Mr. J. Hutchinson's classical paper before the Hunterian Society in 1874, have disarmed the disease of much of its venom. The human wrecks, riddled with syphilis of skin and bone, which I saw so often when a student 30 years ago, are met with now but seldom. Far different is it with cancer, of the nature and cause of which we have little more knowledge—knowledge that is fruitful of practical outcome—than in the days of Baillie. Our remedy is still the knife alone, that last resort of art, extirpating what it is powerless either to prevent or to control. Thus two of these diseases have yielded much of their virulence to the advance of science. Can it be that cancer attacks some subjects of lesser resistance which now escape the other diseases? Or is there a struggle for existence amongst diseases and when two are partly worsted a third may prosper?

I am, Sirs, yours faithfully,

Weymouth-street, W., July 11th, 1905. R. HINGSTON FOX.

BRITISH MEDICAL ASSOCIATION: ANNUAL MEETING AT LEICESTER.

To the Editors of THE LANCET.

SIRS,—In your very full report in THE LANCET of July 29th of my remarks made at the opening of the discussion on the Surgical Treatment of Non-malignant Diseases of the Stomach there is one mistake. On page 327, column 2, the first sentence reads:—

> In one case Mr. Moynihan recognised the existence of an hour-glass stomach but failed to see that the stomach was trifid and so the operation failed of its purpose.

The case of trifid stomach was recorded in THE LANCET of August 8th, 1903, p. 388, and was given in detail on p. 169 of the pamphlet which I distributed at the meeting. The report received with regard to this patient in June, 1905, was that she was "completely cured, had gained 2 stones in weight, and could eat anything."

I am, Sirs, yours faithfully,

Leeds, July 29th, 1905. B. G. A. MOYNIHAN.

To the Editors of THE LANCET.

SIRS,—I regret to notice that in your report of the proceedings in the State Medicine Section I am represented as having said that I felt the necessity for an inquiry concerning the value of hospital isolation in the case of other infectious diseases than small-pox. Will you allow me to correct this report and to say that I did not express and do not hold this opinion?

I am, Sirs, yours faithfully,

PHILIP BOOBBYER,

Nottingham, July 29th, 1905. President of State Medicine Section.

A NEW CHLOROFORM AND ETHER REGULATING INHALER.

To the Editors of THE LANCET.

SIRS,—I have read with interest Mr. Harvey Hilliard's account of his new chloroform and ether regulating inhaler in THE LANCET of July 29th, p. 296. Unfortunately, "comparisons are odious," and the comparisons he draws between the Vernon Harcourt inhaler and his own being distinctly unfavourable to the former perhaps room will be found in your columns for an expression of opinion by one who knows neither party and who has no interest in either invention. True, I cannot speak of Mr. Hilliard's invention, for I know nothing of it beyond what I have learned from his own lucid account in your pages. What, then, can I say? This: for nearly a quarter of a century I have been administering anæsthetics with greater or less frequency to all kinds and classes of patients under all sorts of conditions by means of all forms of inhalers, from the simple towel of Edinburgh to the more imposing and impressive machinery becoming one who earns his daily bread as an anæsthetist. I am not going to say when I passed my millennium but hitherto I have not had a death. This I mention to explain my increasing feeling of nervousness. It may be stupid but I felt that with every case my turn was drawing nearer. So strong did the feeling become that I began to avoid calls to give an anæsthetic. How relieved I was when I heard of Vernon Harcourt I cannot express here, especially as I had a very nervous patient whose friends objected to an operation because one of their circle had died under an anæsthetic and from a certain likeness between the two they were certain that it would be fatal in this case also. The operation was necessary. The patient would have no other anæsthetist. With the Vernon Harcourt inhaler I had not the least anxiety. The anæsthesia was light but perfect and the patient awoke saying, "Why don't you begin?"

In the case of a nervous lad to whom I had given chloroform with a Junker's inhaler (he took it very badly) I was asked to give it again for an operation (removing a tumour in the region of the parotid and submaxillary glands) which would be lengthy and require the utmost quietude. I began in the usual way with pure air until he got accustomed to breathing quietly, then by moving the index finger one mark every minute (by the watch) in seven minutes I had him completely under and for a whole hour by the watch he made not a single movement. Yet the anæsthesia was light. With it I have given chloroform to twins a few months old for phimosis. In fact, I have used the Vernon Harcourt inhaler in a fairly representative set of cases with the utmost comfort and safety to my patients and pleasure to myself. Nor can I say more than if I needed an anæsthetic for myself—a thing I confess I have always dreaded—I should feel no anxiety if the Vernon Harcourt inhaler were used.

I have dwelt on these preliminary points to show that I am not ignorant of what I am writing about. 1. That the apparatus is cumbersome. I have not found it so. Sometimes I have it hung on the wall and the vapour conveyed to the mask by a tube. 2. That it is inconvenient. Not if one learns to hold it aright. I have used it in the most awkward positions and cannot assent to this statement. 3. That the air-ways are restricted by right-angled bends. Theoretically that sounds feasible but practically I have not found it so. It was marvellous how the valves responded to the respiratory movements of a tiny and fragile infant. And what a help it is to hear or to see these valves. I remember at a discussion on chloroform at the Royal Medical and Chirurgical Society how emphatically the great authorities in those days laid it down as a principle that one must watch the respirations keenly. It struck me the more forcibly because Sir Lauder Brunton almost commanded us to have our "Junkers" fitted up with a feather indicator. And although the mask I used in the case of the twins was far too big for their tiny faces, yet "click-click" went the valves and with that sound in my ears I was happy. 4. That it is incapable of giving a sufficient dose of chloroform. Knowing what I know now I would not give 4 per cent. of chloroform vapour for all the fees I get. And with the "increase tube" and a careful handling of the vessel one can give up to that through the Vernon Harcourt inhaler. I have not used it in 1000 cases but the cases I have used it in have been, as I said, fairly representative and I have not used the "increase tube" once. Several times accustomed to other methods I have felt that I must use it, but by

attending to my business I discovered that was simply because I had not fulfilled the conditions of success.

I have no doubt but that Mr. Hilliard's instrument is an admirable one and I regret that I must say—judging from his lucid description and the picture accompanying it—I prefer something I can easily hold in my hand to an inhaler fixed on a board which has to be fixed under the mattress; something I can hang up near me to an instrument that needs a table for its accommodation; something that by its "click-click" tells me the respirations are all right and at a glance that oxygen as well as chloroform is reaching the lungs. For, as he truly says, "chloroform can never be quite safe." Is anything quite safe ever in excess?

I am, Sirs, yours faithfully,

DAVID ANDERSON-BERRY, M.D., F.R.S. EDIN.

July 31st, 1905.

THE USE OF PHENYLHYDRAZIN IN THE EXAMINATION OF URINE.

To the Editors of THE LANCET.

SIRS,—I regret having overlooked the point to which Dr. P. J. Cammidge refers in THE LANCET of July 29th, p. 316. In his article in your issue of July 1st it certainly seemed to me that he was advocating the rapid method of using this test. I am aware that operating with aqueous solutions is not quite the same as is the case with a urinary solution, but even in this latter case I find that if 0·3 gramme of maltose or lactose be dissolved in 100 cubic centimetres of normal urine and the phenylhydrazin test be then applied, an appreciable deposit of osazone crystals results if the water bath be used, whilst boiling over the free flame for five minutes elicits no response at all. With regard to dextrose I have repeatedly found that if the urine contained but a very small quantity a positive reaction could almost invariably be relied on after 30 minutes of the water bath, but this was by no means the case with the rapid method. Further, I have had the same experience when using Dr. Cammidge's own test for pancreatic urine.

I am, Sirs, yours faithfully,

L. C. S. BROUGHTON.

Langley-green, Birmingham, July 31st, 1905.

TEMPORARY FIXATION OF AN IMPERFECTLY DESCENDED TESTIS TO THE THIGH.

To the Editors of THE LANCET.

SIRS,—I have read with much interest Mr. C. B. Keetley's further account of his procedure as given in THE LANCET of July 29th, p. 279. I have no doubt whatever that an imperfectly descended testis has, in the great majority of cases, some value. If it lie within the abdominal cavity I believe it has a greater value than if it has been arrested in the inguinal canal or high in the scrotum. Seeing that one has so constantly to operate for the hernia, potential or actual, which is nearly always present, what should be done with the retained testis is a matter of moment. If it is of value it should not be removed. If it can be brought down into, and *kept* down in, the scrotum this has undoubted advantages. But there are very few cases in which this permanent position is attained. Mr. Keetley does not state in how many it occurred in his 25 cases, but merely "the testis generally remains permanently in the scrotum but near its root." I am not sure what is meant by the "root of the scrotum," but I am sure that a testis placed at the level of the root of the penis is little if at all better off than one in the inguinal canal. Again, Mr. Keetley asks the question, "Do these testes grow when brought down in the scrotum?" and he answers, "Undoubtedly some of them do but not to the size of normal testes." Again, he does not give numbers, and accurate statistics are what is needed on this interesting question. I, personally, have never seen a testis *increase* in size after being artificially brought one inch or so lower down—that is, into the upper part of the scrotum. If any have done so I do not believe that their forcible displacement has had anything to do with their subsequent enlargement. On the other hand, I have seen many testes both in my own practice and in that of other surgeons *diminish* in size after being pulled down. Further, I am at variance with Mr. Keetley when he says that a testis just below the superficial abdominal ring—that is, just below the inguinal canal—is in a comfortable position. My experience is that testes which have reached this position naturally, but have been arrested there, are very apt to be drawn up at times against and through the pillars of the opening, whereby much pain is caused, and that even when no actual hernia exists. To fix a testis artificially here is to leave it subjected to these pulls during the movements of the abdominal muscles and to leave the patient liable to intermittent suffering. Mr. Keetley has been fortunate not to come across such a condition. I have and have had several times to remove the testis for it. But if the testis is of value and cannot be satisfactorily brought down and should not be removed there is still another procedure which may be adopted. This is to return it, after it has been freed if necessary, within the abdominal cavity. I have never regretted doing this. The testis is placed, like the ovary, in a comfortable position, the inguinal canal can be completely closed, and there is only a mythical increased tendency for it to become the site of malignancy. I find more and more surgeons are adopting this simple method and with the most gratifying results.

I am, Sirs, yours faithfully,

Harley-street, W., July 29th, 1905. W. MCADAM ECCLES.

THE TREATMENT OF FRACTURED RIBS.

To the Editors of THE LANCET.

SIRS,—The treatment of fractured ribs by strapping is probably less satisfactory to the patient than to the surgeon. From personal experience it seems so to me. When in South Africa I had three ribs and a shoulder-blade fractured. I was well strapped in routine fashion but was relieved for a short time only, the strapping only too soon becoming loose. Pain prohibited me from lying in bed, doubtless owing to the fractured shoulder-blade, at that time not diagnosed. It then occurred to me that fixation by something resembling a stays would be an improvement upon the old method. A simple binder on these lines made of stiff jean I had made, fitted to lace up at the back and tie in front. Shoulder bands (of tape) also to tie at convenience kept the binder in position. The objection naturally raised to this treatment would be that it was a restraint not only on the injured but also on the uninjured side of the chest and calculated to interfere with the breathing. As a subject of spasmodic asthma from early childhood I can only say that it does not appear to be so. The relief obtained from the home-manufactured stays was enormous and I had no dyspnœa. As far as the ribs were concerned the treatment was entirely satisfactory.—I am, Sirs, yours faithfully,

FRANK ELVY, M.R.C.S. Eng., L.R.C.P. Lond.

Broadwindsor, July 31st, 1905.

FREE MEALS, CLOTHES, AND MEDICAL TREATMENT FOR THE SCHOOL CHILDREN OF BRUSSELS.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

Brussels, July, 1905.

THOUGH the agglomeration of independent boroughs which is called Brussels is very small as compared to the metropolis of London, the city of Brussels is very much larger than the City of London. The *agglomération Bruxelloise* may count some 600,000 inhabitants, a third of whom live in the city of Brussels itself. It is not a third or even a thirtieth part of the inhabitants of the metropolis that live in the City of London. In any case, whatever the historic city of Brussels has done is a matter of importance throughout Belgium and often serves as an example for the whole nation. In view of the physical degeneration of certain sections of the population not only in England but in all industrial countries, and of the fact that on all sides there is a very general conviction that better care must be taken of the children in the primary schools, I have made some inquiries as to what has been done here. Unfortunately for many years Belgium has been distracted by a fierce conflict for and against

clericalism. The cause of education has consequently suffered greatly. There are two sorts of schools—the "free school," managed by the priests, and the communal school, managed by the municipalities. About the latter every possible information is forthcoming; every farthing spent is accounted for and vital statistics are forthcoming so that some information is at hand in regard to the health of the pupils. As for the free schools, the less said about them the better pleased are those who are interested in their maintenance. It is only when infective disease exists among the pupils that the authorities have a right of entrance to these schools and this right is derived from the laws which the French Republic established in Belgium in 1793. In such circumstances the only information available that would be of use for anything like a scientific investigation is that supplied by the local authorities concerning their own schools. Education in Belgium, though widespread, is not universal and there are still a good many children who do not go to school at all. This is notably the case with girls who are frequently kept at home to help in the household work. Nevertheless, in the primary schools of Brussels much the same problems arise as those which have puzzled the education authorities in London and all the great industrial centres. It is evident, in Brussels as in London, that a certain number of children are insufficiently fed and are wanting in clothes, while others are absolutely deficient in health, stamina, and mental and physical development. It must further be recorded that in spite of the gravity of such a state of affairs no very heroic remedy has been attempted. Nevertheless, a good deal of steady work has been done, though reforms were introduced gradually and in detail and there has been no sweeping and sensational legislation.

A peculiar feature about such attempts as have been made is the fact that whereas in England the cry that the children must be fed has gone forth with swelling strength and volume, in Brussels it would seem as if greater attention is bestowed on the necessity of clothing the children. In any case the official reports show that during the school year 1903-04 the number of children frequenting the communal schools of the city of Brussels for primary, secular, and gratuitous education amounted to 13,994. From Nov. 16th, 1903, to March 26th, 1904, these children received 318,699 helpings of soup and 307,609 rations of bread. This was not given to all of the children but to 2691 out of the number or, roughly speaking, to one out of every five children. So that this might be done the municipality of the city of Brussels gave a subvention of £400. It also gave a soup subvention of £200 to the free schools—that is to say, to the clerical schools. It should further be mentioned that 679 little children attending kindergarten schools were likewise fed. On the other hand, and during the same year, no less than 2107 complete suits of clothes and 14,580 various articles of clothing were given to 7983 pupils attending the communal schools. Thus, putting the matter in round numbers, one out of every five children was assisted with gifts of food and one out of every two children with gifts of clothing. This is certainly very different from what is in contemplation in England where the question of clothes has scarcely been raised. A number of different charities and committees work to collect some of the money necessary to provide these clothes. Then when fairs are held the municipality charges the holders of booths, stalls, &c., a certain rent. A portion of the money thus received is devoted to the purchase of clothes for the school children. Moreover, the municipality supplies at the public cost raw material to the schools and the children are taught sewing, dressmaking, tailoring, and so on, by converting this material into clothes. In this manner 146 suits and 6771 different articles of clothing were made by the children themselves and were given to those among them who had need of these things. During the year various private charities supplied 1582 complete suits and 5428 articles of clothing, while 525 suits and 13,796 different articles of clothing were given by the municipality, that is to say, at the public cost. Still more was done for the little children who frequent the communal kindergartens. There are 3385 children inscribed and the average kindergarten attendance was 2848. Among these children private charity gave 218 suits and 2486 articles of clothing and out of the public purse they received 91 suits and 4224 articles of clothing. Private charity also distributed 3850 toys and 2649 gifts of sweets or of fruit to the kindergarten children. It cannot be said therefore that they have been neglected.

Perhaps the fact that the need of clothes is apparently greater than that of food may be due to the more orderly and economical disposition of the Belgian poor. Belgian women have more knowledge and skill with regard to their housekeeping than would usually be the case with a similar class of poor in England. It will then be easily understood that a well-ordered family, living on from 16*s.* to 20*s.* a week, may be able to give regularly the few pence daily required for each child's food but cannot afford an occasional outlay of several shillings to buy clothes. The parents might justifiably prefer to give sufficient food rather than to save money for the purchase of clothes. Thus in a well-kept household poverty manifests itself by the want of clothes rather than of food. This is possibly the reason why in Brussels more has been done in regard to clothing than to feeding the children. Doubtless if this clothing was not given and the parents were forced to spend the little money that they have in buying clothes, there would be more starvation among the children and consequently more food would have to be provided. So that the result would be somewhat similar in the long run.

Much more, however, is done than merely feeding and clothing the children. There is the all-important question of medical inspection and treatment. The schools of the city of Brussels are divided into six groups and each group has its medical officer. In normal times all the kindergartens, the crèches, and the classrooms devoted to primary education must be medically inspected twice each month. The classrooms for secondary education or technical education need be visited but once a month. In each class-room there must be a thermometer and a written record kept of the temperature and this must be countersigned by the medical officer. He must also examine the pupils from the physical and intellectual point of view and endeavour to foresee and to check any abnormal development or tendency to disease. What is qualified as "preventive medicine" (prophylactic), such as cod-liver oil, may then be prescribed at the public expense. A remarkable feature of this medical service is that the medical officers have to give lessons on hygiene to the senior classes—namely, children about 12 years old. At the beginning of each month they must deliver a simple lecture or explanation. Then the pupils must write an essay to show that they have understood what they have heard and the medical officer looks over these essays and repeats on the next occasion what the essays show has not been fully understood. The following are the subjects which the medical officers have to explain and to lecture upon: (1) cleanliness of the person, the clothes, and domestic utensils; (2) the house, its cleanliness, the dangers of damp, the soil, the building materials, and plan of dwellings; (3) air, foul air, and ventilation; (4) water, when pure, when polluted, boiling and filtration, use and abuse of water; (5) heat, fuel, and warming apparatus clothes and boots; (6) light, artificial and natural; (7) food, what constitutes wholesome food, adulteration of food; the moral, intellectual and physical degradation caused by alcoholism; (8) the excretions, care of the skin, mouth, hair, sight, and hearing; (9) exercise, work, play, gymnastics, and rest; (10) accidents, first care in cases of wounds, sprains, hæmorrhage, and poisoning; and (11) contagious and infectious diseases, prophylaxis, and disinfection. For primary schools this seems a fairly complete curriculum and if the pupils apply these lessons to their home life a very considerable and all-round improvement should result.

In regard to infectious disease when a child is absent from school the parent receives a letter inclosing a post-card, with printed questions about the child which he must answer and post. If the child is detained because of infectious illness the Bureau of Hygiene is at once informed and all children living with the patient are forbidden to go to school till after disinfection. The disinfection, of course, follows on the removal of the patient to the hospital or on death or recovery. Vaccination is not obligatory but during the year 2489 out of the 13,994 children were revaccinated, and this is a good number for revaccination is not offered till the children are nine years old. Apart from vaccination, "preventive" treatment was given to 3860 children out of the 13,994 and 3929 children were found to have defective teeth. Of these latter, 2251 presented themselves for treatment by the surgeon-dentist employed by the municipality to look after the school children. From the ailing or delicate children, 785 were selected and sent at the cost of the town either to the country or to the seaside where

they enjoyed between them 9945 days of pure air, or rather more than an average of 12 days for each pupil. In this respect private charity ran a neck-to-neck race with public enterprise, for various charitable societies sent 798 children to the seaside or the country. But their outing was a little shorter, amounting to 8594 days in all, or an average of a little under 11 days for each child. These, of course, were the children from the free schools. Of the 785 children sent to what are known as children's colonies by the municipality only two failed to gain in weight. There can be no doubt, therefore, as to the very great amount of good achieved by these brief holidays in the open air or by the sea. Measures have now been taken to record more systematically the benefits that result. Next autumn all the children placed under special medical surveillance, or what is called "preventive treatment," and this is likely to be not far short of 4000 out of 14,000 children, will be weighed and the chest measurements will be taken. In this manner some valuable data will be collected and other improvements are likely to be effected from year to year.

According to a report drawn up for the municipality by Dr. Gaston Daniel in February, 1897, there were at that date out of 14,000 school children 2442 who were badly shod and 3620 in urgent want of clothes. Then 684 had no bed to sleep on and 2474 were insufficiently fed. These figures only deal with the communal schools of the city of Brussels and the principal difference to-day is that these wants are better provided for. Nor must it be thought that the surrounding boroughs are neglecting these questions. For instance, the outlying district and borough of Anderlecht, which has a population of 55,002 inhabitants, has decided to provide a complete midday meal. All are to be admitted, even the pupils from the free schools; the only condition is that they must dine in the communal building. It is estimated that the meal will cost from 1½*d.* to 2*d.* The charge in any case will be 2*d.* and it is hoped that a slight profit will be made on this so as to help to defray the cost incurred for those who cannot pay. Tickets will be given to the children and great care taken not to let it be known who are those who can afford to pay. Above all, no child is to be exposed to any sort of humiliation. The municipality of Anderlecht will pay for these meals; no school child will be refused the food which he needs. If some of the outlay can be recovered from the parents this will ease the public burden but whatever happens the children must be fed. From all this it will be seen that the inhabitants of the city of Brussels and the neighbouring districts are moving forward. Philanthropy and private charity have done a good deal but this is all too uncertain and unequal in its effects. It is a useful help to municipal effort but it needs to be regulated, systematised, and evenly distributed by the municipal authority. Thus it is that the part played by the municipalities daily increases in importance.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Death from Anthrax.

THE occurrence of anthrax in our cattle is becoming so common that it suggests ignorance or carelessness and a relaxation of the vigilance which against such a foe should be constant but seems apt to slumber. But, as if this danger were not enough, there is the never-ceasing risk run by those engaged in cutting and sorting foreign rags and in handling foreign hides, &c. An inquest was concluded on July 25th by Mr. P. P. Maitland, the West Riding coroner, on the body of a girl, aged 16 years, concerning the cause of whose death there was for a time some doubt. It was alleged that she contracted a disease while cutting and sorting some foreign rags at the warehouse of a firm of rag merchants at Dewsbury so far back as a little before Easter. At the opening of the inquest it was stated that the girl, previously strong and healthy, had become subject to boils on the hands and that "a virulent abscess formed in the right armpit." A post-mortem examination was made by Mr. A. E. Sellers of Thornhill, near Dewsbury, who found abundant evidence of tuberculosis but was unable to detect the existence of anthrax. Some portions of the viscera were sent to Dr. J. R. Kaye, the medical officer of health of the West Riding, for examination and he stated in his evidence that in the lungs, which were highly tuberculous, he had found anthrax bacilli in great numbers, and that anthrax existed and was the cause of death. The verdict of the jury was that the girl died from anthrax while suffering from tuberculosis. It would be well if all wool, rags, or hides from infected countries were either carefully examined microscopically, sterilised by superheated steam, or in some way made safe for those who have to get their living by working among them. Even if all the avenues of approach were not protected some of them would be. No doubt the ignorance of farmers, butchers, and others who may come in contact with infected matter makes thorough supervision difficult, but it is not too late to attempt a more efficient safeguarding from anthrax than exists at present.

Oldham Imbecile's Death.

One of the unfortunate cases that occasionally occur to disturb the public mind as to the treatment of imbeciles in workhouses and asylums was inquired into at Oldham on July 21st. A man was admitted to the Oldham workhouse on July 23rd, 1904, and to the imbecile ward on August 3rd following, when he had no injuries. On June 29th this year he was found to be suffering from a dislocated shoulder, which was also extensively bruised, the jaw was swollen, and there were bruises between the shoulders. These injuries seemed quite recent. The man was very seriously ill besides suffering from softening of the brain, to which condition death was attributed. The attendants expressed surprise at the man's state and the head attendant said that he could not account for the bruises. At times the patient was stated to be quite vicious and during the night before his death "there must have been something unusual as a portion of the bedding had been displaced." Two other attendants were closely questioned but "failed to give any information." The jury were not satisfied with the evidence and the inquiry was adjourned. It is evident that in some way considerable violence was used by someone and the mystery should be cleared up.

To Live a Century.

Among the many picturesque utterances of Sir James Crichton-Browne few have attracted more attention than that of his belief that "every man is entitled to live a century." So much is this the case that the medical officer of health of Manchester has actually been "interviewed" on the subject by a representative of one of our daily papers. Dr. J. Niven appears to have expressed his views with frankness, conditioned by a certain caution which is rarely wanting in those whose privilege it is to have been born north of the Tweed. He was disposed to agree with the general tenour of Sir James Crichton-Browne's speech, and was not prepared to deny "that a century of healthy life could be attained in health and vigour," nor "that given favourable conditions and barring accidents this was the normal duration of man's life." Excessive worry and the continued irritability associated in recent years with the business life of our large towns no doubt reacted on the nervous system with disastrous results. Composure of mind, well-ordered and regular habits, on the other hand, formed the best basis for a sound constitution. Dr. Niven was of opinion that with regard to the statement "that regular employment must be secured and poverty diminished," that this very considerable problem involved, among other things, the question of education. He would secure to every youth "a thorough knowledge of at least two trades," presumably on the principle of two strings to the bow. How this desirable state of things is to be brought about, even with Government aid, was not indicated. Why Sir James Crichton-Browne, or Dr. Niven, or any of the various lookers into the future should fix on a century as the normal duration of human life is not apparent. Being liberally minded as to time they surely might have allowed man as long a life as that of the tortoises of the Galapagos Islands. These creatures show the great advantage of a quiet contemplative life to those who wish to attain the length of days which we are told on good authority is "normal" for man when duly qualified and conditioned.

The Whalley Asylum Inquiry.

Your Liverpool correspondent noticed last week the inquiry as to the suitability or otherwise of the site selected by the Lancashire Asylums Board for a great pauper asylum. There is no doubt of the great pressure on the present accommodation and the need for more, but that, of course, has no

bearing on the question as to the site at Whalley being a good or a bad one. The evidence given at the inquiry was not only contradictory on important matters where opinions might quite properly vary but also as to matters of fact. The county surveyor and architect said that the site had a good elevation and a very fine plateau, good drainage facilities, a good water-supply could be obtained, the railway was near, and "it was also possible to carry on brick-making." He had not noticed any offensive smell from the river Calder and was not aware that sewage entered the river. He had not seen fog on the land, and so far as he could ascertain it had only been flooded twice in 40 years. Dr. F. P. Sarjant, the county medical officer of health, said that statistics showed that the death-rate of Whalley was lower than that of the county and than that of the rural district. He did not think that the health of the district was endangered by any pollution that might exist in the Calder. Professor Boyd Dawkins said that the area under consideration was covered with boulder clay of uncertain thickness but proved to be more than 40 feet thick and he was of opinion that it would be impossible to drain it so as to convert it into a perfectly dry site. He considered the Calder "an extremely filthy stream" and that it would be most improper to plant any large public institution close to the area. The prevailing south-west winds would carry whatever smell there might be. Such a situation would be the last he would choose for the erection of any institution. The Local Government inspectors had by personal inspection satisfied themselves that the Barrow Brook was "very bad." In his evidence Mr. Mould said that no asylum in England or elsewhere was built on such a site as the one now proposed. Mr. G. W. Mould, Dr. J. Dreschfeld, Dr. Martin, Dr. Gray of Blackburn, Dr. Musson, Dr. G. E. Orme, and Dr. L. T. Lancaster of Clitheroe all gave evidence as to the unsuitability of the site. Mr. I. H. Gott, a civil engineer of London, said that it was practically impossible to drain it, and Mr. E. L. Morgan, borough engineer, Bolton, said it would cost something like £18,000 to carry out a scheme of drainage which after all would not be efficient as it would not take the water between the line of pipes. Several other witnesses gave evidence of the unsuitability of the site. The application of the asylums board was for power to borrow £32,910 for the purchase of lands at Whalley for a pauper lunatic asylum for the county; this, plus the £18,000 for drainage, seems a good round sum to be spent before the foundations are begun, so that the cost, expected to be £500,000 or £600,000 by the time the building is completed and furnished, will be something to make ratepayers shudder, and if the site is so unsuitable as many well-known men declare it will be a costly and improper blunder.

August 1st.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

City Analyst of Bristol.

THE enlargement of the boundaries of the city of Bristol, carrying with it, as it does, a large increase of work, led Mr. F. W. Stoddart, who has for many years acted as city analyst, to ask for an increase in his salary of £200 per annum. Within the past few years the number of samples which he has examined has increased from 400 yearly to over 1200. It is of interest to note in this connexion that the inspector of food and drugs who takes the samples receives a salary of £300 per annum and is provided with an assistant who helps him to administer the Shop Hours Act. It would seem, therefore, that the members of the Bristol corporation cannot discriminate between highly skilled labour and that which is more or less mechanical. In May last the watch committee recommended the corporation to pay Mr. Stoddart £200 per annum for the first 400 examinations made and 5s. for each subsequent examination. This recommendation was, however, referred to the committee in order that an inquiry might be made jointly with the health committee as to the employment of an analyst who should devote his whole time to the work of the corporation, including the bacteriological investigations which have been carried out during the past two years by Professor A. F. Stanley Kent at Bristol University College. As a result of this inquiry the committees named recommended the corporation to appoint a city analyst who had been trained in bacteriological work and to pay him a salary of £400 per annum, increasing to a maximum of £600; they also advised the appointment of two assistants and a laboratory attendant and the equipment of a chemical and bacteriological laboratory. When these recommendations were before the council on July 25th an unsuccessful attempt was made to secure a continuation of the services of Mr. Stoddart upon the terms named above, and in the end the two committees were asked to reconsider the whole question, and it is understood that they will report as to the practicability of the analytical and bacteriological work being carried out in the laboratories of University College.

Crime in Glamorganshire.

At successive assizes during the past few years judges on circuit have congratulated grand juries in North Wales and in most of the South Wales counties upon the absence of serious crimes. So small has the calendar become that it has been decided to hold a joint winter assize in one county, to which will be brought the prisoners if there are any from the three counties, and if there are any civil actions they will be taken from the same areas. It is to be regretted that the county of Glamorgan cannot show such a satisfactory record. In charging the grand jury at Cardiff on July 25th Mr. Justice Phillimore referred to the very large proportion of sexual offences, no fewer than 23 of the total number of 65 prisoners being charged on that account. He recalled the fact that at the previous assizes there was evidence of some good having arisen from the religious revival but observing that many of the prisoners came from the colliery districts where the revival was very strong and very effective he feared that they had already got into the reaction.

Didworthy Sanatorium.

The second annual meeting of the supporters of the Devon and Cornwall Sanatorium for Consumption at Didworthy was held at Plymouth Guildhall on July 25th, the Earl of Mount-Edgcumbe presiding. The chairman stated that the new buildings would be completed in two weeks and that the sanatorium would then provide accommodation for 35 patients. The report showed that 49 patients had been admitted during the past 12 months. The financial statement showed that during the year the subscriptions amounted to £330, including five guineas from the Prince of Wales, and that an unfavourable balance remained. The Earl of Mount-Edgcumbe made a strong appeal for more subscriptions.

The Medical Officer of Health of Chipping Sodbury.

At the meeting of the Gloucester rural district council held on July 24th the clerk stated that he had received a letter from the Chipping Sodbury rural district council stating that they "had appointed a fully qualified medical officer of health at a salary of £30 per annum less than that demanded by Dr. Bond," and adding that "they feel justified in their action and cannot reconsider the matter." The chairman mentioned that the decision of the Chipping Sodbury council not to reconsider the matter was only carried by a majority of two votes.

July 31st.

LEEDS.

(FROM OUR OWN CORRESPONDENT.)

Proposed Coöperation in the Nursing Arrangements of Hospitals for Infectious Cases.

ON the invitation of the sanitary committee of the West Riding county council a very important conference has lately taken place between 107 local authorities, 11 of these being non-county boroughs, 79 urban districts, and 17 rural districts, to discuss a scheme outlined by Dr. Kaye in reference to the supply of nurses to the hospitals under their control. In a memorandum presented in June, 1904, it was stated that there were in the administrative county 38 permanent hospitals for isolating infectious diseases, as well as about 50 for small-pox patients. The total accommodation was represented by about 2000 beds. Taking the nursing staff at one nurse to six beds their numbers would amount to about 300. The salaries paid varied from £12 to £35, so that the total salaries, excluding those of matrons, amounted to nearly £6000. It was pointed out that under

the system at present in operation when an unusual number of admissions occurred at any particular hospital special nurses had to be obtained, and sometimes with difficulty, at enhanced salaries of two or three guineas per week, while at other hospitals a decrease in the number of patients caused the nurses to be temporarily in excess of the requirements. On these facts Dr. Kaye has suggested that there is room for a coöperative system among the hospitals for the interchange or transference of nurses as fluctuations occur. This would lead to efficiency and economy and would be the means of adjusting the supply of nurses to the demand in any given hospital. The scheme would depend on the voluntary coöperation of the various hospital authorities who by a representative committee would fix upon a standard gradation of nurses and their wages and uniform. Each hospital, as at present, would appoint its own staff, but every nurse on engagement would be required to sign the conditions of appointment as settled by the joint committee, to be uniformly applicable in all the federated hospitals. One of these conditions would be that the nurse undertakes to serve temporarily in any other hospital when requested by her employers to do so. The scheme would necessitate the institution of a central bureau to which each hospital would send a weekly return of the number of admissions and discharges and of the number of nurses employed. The scheme appears to be an admirable one and eminently necessary in the case of hospitals for infectious cases, in which, of course, the number of patients varies so greatly and within such narrow limits of time.

Opening of the Dental Department at the Public Dispensary.

The new dental department of the Leeds Public Dispensary was formally opened on July 27th by the Lord Mayor of Leeds. The chairman of the dispensary board in introducing the Lord Mayor referred to the part which had been taken by the dentists of Leeds and district in equipping the department and complimented them on their public-spirited action in the matter. The department is situated on the first floor of the working part of the institution and consists of a series of six rooms, access to each of which is obtained from the gallery of the large out-patient hall. The rooms are all well lighted, have polished floors, and are heated by hot water coils. The ventilation is, like that of the medical, surgical, and ophthalmic rooms on the ground-floor, carried out on the exhaust system. The waiting-room will accommodate about 80 patients. The ordinary extraction room, 27 feet by 16 feet, is fitted up with two chairs and the usual fittings and instruments. The recovery room is situated between the extraction room and the operation room and communicates directly with each. The operation room is 20 feet by 17 feet, and has been fitted up with enamelled operating table, stools, instrument cupboards, &c. The chair is of the Morrison pattern, with wooden seat and back. There is a copper steriliser and the lavatory basins may be filled with shower spray, the temperature and flow of the water being regulated by a foot lever. In addition to the ordinary anæsthetic apparatus there is apparatus for the administration of "gas" and oxygen. Communicating with this is the nurses' room which will be used as a dressing-room for female patients. The conservation-room, which has roof light as well as side light, is a large room 56 feet by 20 feet and in the meantime has been fitted up with three chairs only. Two of these are of the Ash's hospital pattern and have been presented by the makers; the third is a "Twentieth Century" chair which has been presented by the Dental Manufacturing Company. The chairs are provided with combined fountain spittoons similar to those recently supplied by Messrs. Ash to the London Hospital. There are also among the apparatus a suspension chord Columbia electric engine, a Cuttriss Wallis motor, and two Parson Shaw foot engines. Electric-light brackets with universal motion are provided for each chair. In one corner of the room is a work bench fitted with a polishing lathe run from counter shafting driven by a quarter horse power electric motor and also provided with gas-fittings for blowpipes, &c. The staff consists of an honorary consulting dental officer and of six senior and six junior honorary dental officers, two of whom attend each day. The services of Dr. Capper Johnson and of Mr. Harold Collinson have been secured as honorary anæsthetists and it is confidently anticipated that the department will prove a valuable addition to the charities of the town and will supply what has long been wanted in Leeds—the clinical side of a dental school.

August 1st.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

University of Edinburgh Graduation Ceremonial and Valedictory Address by Professor A. R. Simpson.

ON July 28th the summer graduation ceremonial of the University of Edinburgh was held, the Vice-Chancellor, Principal Sir William Turner, K.C.B., presiding. The only honorary degree conferred on this occasion was given to Mr. John Horace Round, M.A., D.L., the historian. The degree of Doctor of Medicine was conferred upon 75 graduates, including two ladies; while 155 candidates, including eight ladies, were admitted to the degree of M.B., Ch.B. Five theses were awarded gold medals. Professor A. R. Simpson, as Dean of the Medical Faculty, presented the graduates. Professor Simpson referred to his resignation, saying that in view of his age and that he had occupied the chair for 35 years he deemed it wise to resign and to hand on the torch of midwifery to his successor. He also mentioned that Professor D. J. Cunningham would succeed him as Dean of the Faculty of Medicine. He said that it was not without a pang that he resigned, because of the fact that his department became yearly more thrillingly interesting to the scientific explorer and more urgently important for the general practitioner. He then briefly referred to the enormous progress which had been made in his own department as well as in the other departments of medicine, and said that this had been attended with changes in the training of entrants to the profession. When he began to study the system of medical apprenticeship had not quite died out. Three of his fellow students had been apprenticed to the late Professor Spence, while he had had the good fortune to be apprenticed to the late Professor Goodsir. He had not in that capacity been helped much in learning to cure disease but the apprenticeship gave him opportunities for much dissection and for acquiring facility in the handling of forceps and scalpel that had been a lifelong benefit. It had brought him also under the spell of a man of genius who was a tireless toiler and who sought always what he called "God's truth." He (Professor Simpson) thought that he was himself the last of the Edinburgh medical apprentices. Professor Simpson then referred to the growth of the examination system with the disappearance of the apprenticeship system until it had become a multiplied misery. It had become a necessity because of the extension of all the subjects of study. He made a number of humorous references to his earlier days when a professor might change his chair or profess to be able to teach any subject in the university, and recalled the fact that Sir James Simpson had been urged when professor of midwifery to become a candidate for the chair of practice of physic vacant by Alison's death. He also related several very amusing experiences of his own when he was examined. As he suggested, his experiences compared with the experiences of those whom he was addressing appeared primeval and would make them realise the stupendous changes which had swept over all the fields of medicine during the intervening half century. The era spanned had been one of those "once more" epochs which the Hebrew mind had taught us to discern, when we saw the Supreme Power "shake the heavens, and the earth, and the sea, and the dry land," "that those things that cannot be shaken may remain." He said: "I do not know in what mood of pessimism I might have stood before you to-day had it not been that ere the dew of youth had dried from off me I made friends with the sinless Son of Man who is the well-head of the stream that vitalises our civilisation, and who claims to be the First and the Last and the Living One, who was dead and is alive for evermore, and has the keys of death and the unseen. My experience compels me to own that claim." The changes that had taken place took place under the influence of two factors. There was, first, the extended range of observation that had been opened to sense largely by electricity and the spectrum, and secondly, the guidance that had been given to imagination by the doctrine of evolution. The outer man had acquired instruments of precision, the inner man had been given a clue to guide him through the maze of thought. He then referred in glowing terms to the transformations which he had been made to see. He referred to the doctrine of the ether, to the change in men's ideas regarding the age of the earth, of the appearance of animal life upon it, and of the very constitution of the world. The atom brought from the very

verge of thought to guide the chemist in his research had itself been atomised and presented itself now as an object built up of many parts. "It is no longer a solid block but an edifice—a laboratory—into which we can go and see business transacted among the multitude of ions or electrons, where physics is fain to borrow the language of biology for its expression. We seem to ourselves to have come into the borderland where the homogeneous first becomes heterogeneous, where the inviaible takes on visibility, where ether clothes itself with matter, and where we are definitely told we may see the mutation of one element into another, so that when we have entered an atom that bore over the entrance the sign of a radium workshop we emerge by a door called helium." He then spoke of how the unit of biology had been transformed. The cell was becoming visible under the microscope when the speaker was born. But the cell was now a speck of bioplasm. In the old nucleus there had been found threads of a life-web resolving into chromosomes which held and could transmit the peculiarities of various forms of life. The plasm dot of a chromosome was again resolved into ids- and biophors with their determinants till they might well imagine they had come into a vast cathedral from whose roof there echoed the sound of the voice of one of their brethren of the centuries B.C. who called his treatise on anatomy "A Hymn to the Supreme Being." It was here that they had the most thrilling of all the transformations that had taken place in the thoughts of those who had the gift, the right, and the responsibility to think. Man, "servant and interpreter of nature," soaring among the stars or searching out the secrets of the atom and the cell, had found himself an item in a social cosmos, subject through all its bounds to the reign of law. A compo-ite being capable of communing with the Spirit, who had not at any time, anywhere, among any people, left Himself without a witness, he found that there was nothing alien to him in all the universe. Standing on the summits of creation and summing up in himself the last results of the long processes of evolution he looked to find his ultimate home in One Who was from everlasting to everlasting God. He was the more encouraged to such lofty ideal when he traced his genealogy back, away back to where the foundations of the earth were laid. His mind reflected the mind that fashioned its materials, and somewhere among the ions and the biophors, where he could scarcely tell whether the ion was not already instinct with more than electricity or the biophor held less than life, he saw the narrow fissure between the unseen and the seen, between the not-living and the living, bridged by a kind of virgin-birth, with repetitions of which in some form natural science would make him familiar as he traced the various stages in his own evolution. Professor Simpson then dealt with the individual life. In the germ plasm of some 70,000 primordial ova only four or five were selected to pass through evolutionary processes that would recapitulate at various stages the history of their pre-human genealogy before they came to claim a place in a nation's register. Each of the four, as his evolution still progressed, would find after he had come to himself, and so long as his self-consciousness abides, that the material part of him was subject to incessant change. He was also continually putting off his moral vesture and replacing it with a better-fitting garb. If he reached the Mosaic term of three score years and ten, and if he be wise he would long ere then have pondered how the last fashion of his vestment would be put off. In the years to come they would recall the unusual concurrence of the simultaneous leave-taking of the University by the graduates and their promoter. They would say: "We came away a goodly company through the gateway that leads to the rosy dawn. He passed out, all alone, through the door that leads to the sunset and the evening star. He was an old man, not a great man, he had been a friend of great men, and came out of a great time in the nineteenth century, 'when there was midsea and the mighty things,' and it looked to the men of his generation as if old things had all passed away and a new world begun. And he told us that the great lesson he had learned on his way through life was that 'The world passeth away, and the lust thereof; but he that doeth the will of God abideth for ever.' Farewell." This remarkable address was listened to with the greatest attention and at its conclusion the speaker was accorded loud and prolonged applause. The next incident was the presentation to Professor Simpson of an illuminated address from the students and the new graduates. The presentation was made by Mr. H. J. Norman, president of the Students' Union. The Vice-Chancellor also spoke in feeling terms of Professor Simpson's severance from the University.

University of Aberdeen Quater-centenary.

The recently appointed quater-centenary subcommittee consists of Mr. James Murray, Glenburnie Park, convener of the hospitality committee; Mr. P. J. Anderson, convener of the publications committee; Councillor Alexander Wilson, and Mr. D. R. Thom, secretary of the Senatus. It has visited Glasgow and Edinburgh and had interviews with Sir T. M'Call Anderson, Sir William Turner, Professor Taylor, and Professor D. J. Cunningham (formerly of Trinity College, Dublin). Full information has been obtained regarding the preliminary organisation, publications, and expenses incurred in connexion with the centenary celebrations at Edinburgh in 1884, Dublin in 1892, and Glasgow in 1901.

July 31st.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Royal University of Ireland.

UP to the present year the method adopted at the final M.B. examination of the Royal University of Ireland was as follows. The candidates were first examined in the various subjects (orally, clinically, and by papers) and at the termination the examiners decided, at a meeting, who were to pass and who were to be rejected; they also recommended a certain number for the honour examination and these were again examined by papers, clinically, and orally to decide their relative position on the honour list (of course, there is no clinique in midwifery). Now to this method there were many objections: 1. The candidates were so tired out that it occasionally happened that some of those who were recommended for honour, and might have obtained that distinction, were so wearied with the previous week of the pass examinations that they did not present themselves for the honour contest. 2. The examinations being held in Dublin it involved additional expense to the provincial candidates (board and lodging). 3. It took up much additional time of the examiners, the majority of whom do not live in Dublin. Feeling the weight of these objections many alternative schemes were discussed: (*a*) it was thought by some that one examination alone would be sufficient and that all that was needed was to recommend the candidates who were at the head of the lists and who had done exceptionally well; (*b*) others recommended pass and honour questions to be placed on the same paper, the pass questions being more numerous than the honour; and (*c*) the University of London method was also suggested—that is, to allow a candidate to take honours in special groups (medicine, surgery, or midwifery). The principle finally adopted and put into force for the first time in the spring examinations of this year was a different one Candidates were obliged to state beforehand whether they would go in for the pass or honour course and having decided on one or the other plan they were obliged to keep to this. Pass and honour papers were given out in each group of subjects on the same day, and a candidate having selected an honour paper could not—on finding it too difficult—ask for the pass on the same subject or on any of the other groups. As might have been anticipated, the plan totally failed. 1. Really well-prepared candidates of a timid or self-distrusting nature took the pass papers while others, more optimist in regard to their capabilities, went in for the honour questions. 2. Examiners found it difficult to adjust a proper standard. The duty of an examiner in a pass examination is not so much to throw the candidates into competition with each other but rather to find out whether he can honestly say a particular candidate is fit to pass or not. When it comes to the honour candidates the examiner has first to decide, Have the students come up to the honour standard, and, if so, what is their relative position to one another? This can only be done by the examiners reading together and marking together the answers of each candidate and giving to each on the *viva voce* examination identical questions. But suppose some of the candidates are not up to the honour standard then arises the further question, Are they fit to pass? But no provision existed for such a contingency, as the candidates were obliged all through to take the pass or the honour course. The method was found—after the first experience—to be totally unworkable, a point on which all the examiners agreed, and at a meeting of the Senate

of the Royal University held on July 27th the following regulations were adopted for the holding of the M.B., B.Ch., B.A.O. degrees examination, to come into force at the October examinations:—

1. That the examinations in medical pathology and surgical pathology be separated, 25 marks being assigned to each.
2. That the pass examination shall be held in all respects in the same manner as heretofore.
3. That the further examination for honours shall be exclusively a written examination and only those candidates can be admitted to it who, upon their answering at the pass examination, are specially recommended for admission by the examiners.
4. That honours shall be awarded not on the examination as a whole, as heretofore, but in the following groups:—(*a*) medicine, theoretical and clinical, including therapeutics, mental diseases, medical jurisprudence, sanitary science, and medical pathology; (*b*) surgery, theoretical, clinical, and operative, including the use of instruments and appliances; ophthalmology and otology, surgical anatomy, surgical pathology; (*c*) midwifery and diseases of women and children.
5. The candidates qualified to present themselves for honours may select one or more of the foregoing groups.
6. The honour papers shall be set on the day following the announcement of the results of the pass examination. They shall consist of (*a*) a paper on medicine and medical pathology; (*b*) a paper on surgery and surgical pathology; (*c*) a paper on midwifery and diseases of women and children, each paper to be of two hours' duration and 100 marks to be assigned to each.
7. The honours in each group shall be awarded taking into account the entire of the marks obtained by the candidate at the pass examination in that group, together with the marks obtained on the honour paper.
8. The exhibitions shall be awarded having regard to all the marks obtained both at the pass and the honour examinations.

Scarcity of Water.

Owing to the warm dry summer many places in the north of Ireland, especially the seaside resorts, are experiencing a drought. In Larne the water-supply is cut off from 4 P.M. until 6 A.M. There is also a scarcity in Bangor, Whitehead, and Portstewart—that is, the supply is intermittent.

Hospital for Diseases of the Skin, Belfast.

At the annual meeting of the supporters of this hospital held on July 29th it was reported that 932 patients had been treated during the past year, of whom 35 were admitted as intern cases. A Finsen lamp of the newest type has been purchased and special thanks were given to Dr. J. C. Rankin (who has charge of the electrical department in the Royal Victoria Hospital) for the help that he gave in the matter of the selection of this lamp. Financially there is a balance to the credit of the hospital of £246 6*s.* 3*d.*

August 1st.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Hydatid Cysts of the Liver.

AT a meeting of the Surgical Society held on July 19th M. Guinard said that in his opinion the best method of treating hydatid cysts of the liver was incision preceded by an injection of formol of 1 per cent. strength and followed by extraction of the germinal membrane and suture of the cyst without packing. Since adopting this method he has had uniformly good results. In one of his cases, however, the patient several months after the operation, when he appeared to have completely recovered, returned, having an abundant effusion of bile into the cavity. This effusion was evacuated by puncture and did not recur. This complication would seem to be an argument in favour of packing but these effusions of bile were so rare and could be so easily treated that simple suture without packing must be considered the best treatment.

Removal of the Mammary Glands of Animals in Milk.

At a meeting of the Academy of Sciences held on June 17th M. Porcher stated that removal of the mammary glands of animals in full milk produced marked glycosuria in them during the first few hours after the operation. This glycosuria was at its height in about four or five hours and was accompanied by distinct hyperglykæmia. The glycosuria then declined rapidly and in less than 48 hours after the removal of the glands the urine showed no reducing property. From these researches M. Porcher concluded that the transformation of glucose into lactose (a process necessarily accompanied by the formation of galactose which was found in the excreted lactose) was an intra-mammary function and that lactose could not be formed, as has been alleged, from the union of glucose derived from the blood and galactose derived from the food.

Treatment of Cancer of the Tongue.

At a meeting of the Surgical Society held on July 12th M. Poirier said that in a communication made in 1902 he had recommended for the treatment of cancer of the tongue an operation based on sound logical and anatomical principles. He proposed the systematic and simultaneous removal of the cervical glands and the lingual neoplasm. In 1904 he showed two male patients, one of whom had been operated on 22 months previously and the other 33 months previously, both of them remaining free from any trace of relapse. These operations now dated three or four years back without any appearance of relapse. M. Poirier then considered the question in its histological aspect. Histological data showed that 12 times out of 20 the cervical glands were affected at the onset of cancer of the tongue and their removal in every instance was plainly indicated. As a matter of detail he mentioned that at the beginning of the operation he placed the cannula of a trocar between the cricoid and thyroid cartilages. In conclusion, he expressed regret that many patients suffering from cancer of the tongue sought surgical aid too late, having been buoyed up with false hopes or deceived by the treacherous illusions of radiotherapy or other methods of treatment.

The Use of Movement in the Treatment of Fractures.

Acting on the principle that the bones, like all the parts of the body, require to be freely moved in order that they may attain the full degree of vitality essential for repair, M. Lucas-Championnière, instead of adhering to the classical treatment of fractures by fixation, has replaced it by early mobilisation and massage. During the last 25 years he has treated a very large number of fractures in this way and at a meeting of the Academy of Sciences held on July 10th he described (without entering into specific details) those to which the method was applicable. Among those he enumerated fractures of the upper and lower ends of the humerus; some fractures of the body of this bone; all those of the elbow, including those of the olecranon; many occurring in the two bones of the forearm; fractures of the various bones of the hand and foot and of the scapula; almost all those of the fibula; many bimalleolar fractures; fractures involving the knee and the neck of the femur; and several fractures of the middle of the diaphysis of the long bones of the leg and arm. The principal advantages of massage and early mobilisation were that pain soon disappeared and that the duration of the process of repair was considerably shortened.

Venous Bruit de Souffle at the Level of the Femoral Veins.

At a meeting of the Academy of Medicine held on July 18th M. Molle described some observations which he had made on the occurrence of certain venous blowing murmurs (*bruit de souffle*). He said that at the period of puberty young men might exhibit special symptoms analogous to chlorosis in girls. The condition in question presented, together with numerous indefinite subjective signs, an objective sign of very frequent occurrence, consisting in the presence of blowing murmurs, sometimes of considerable intensity, situated almost exclusively on a level with the femoral veins. In 22 per cent. of the cases observed by him general bad health and overwork (especially the overwork of military service) had induced tuberculosis, which ran a rapid course. He considered that these venous murmurs on a level with the femoral veins ought to be carefully looked for at inspections (*au cours de tournées de révision*) in certain apparently normal individuals. This symptom coexisting with other familiar signs, such as palpitation, breathlessness, indigestion, and asthenia, frequently simulated by malingerers, should be kept in mind with a view to the rejection of persons thus affected.

Vulcanite Tooth Plates.

At a recent meeting of the Société de Médecine Publique M. Eilersten, a dentist in Paris, drew attention to the dangers of vulcanite tooth plates coloured red or pink in imitation of the mucous membrane. He said that wearers of these dentures frequently suffered from buccal inflammation, a sensation of heat or burning, and a spongy state of the gums—conditions which might end in suppuration and inflammation extending as far as the pharynx and larynx, with concomitant salivation and fœtid breath. The symptoms closely resembled those of mercurial stomatitis and dental vulcanite was coloured by a large addition of vermilion, amounting to as much as 30 per cent. of its weight. Vermilion was a sulphide of mercury and was usually considered to be physiologically inert on account of its

insolubility, but when it was in prolonged contact with the microbes existing in the mouth the indiarubber was attacked and the vermilion was transformed into soluble salts of mercury which produced mercurial stomatitis and inflammation of the gums. These views naturally did not meet with unanimous approval at the meeting, and it was pointed out, in reply, that persons who did not use artificial teeth were liable to the symptoms described quite as often as, if not oftener than, the wearers of such teeth. The question was in reality one of personal cleanliness and care of the mouth.

July 31st.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Extraordinary Power of Controlling the Muscles.

MEDICAL circles in Vienna have now the opportunity of witnessing some very remarkable examples of muscular action which a man aged about 30 years is showing in a hospital. His power over his muscles is so great that he can perform feats that would usually be deemed incredible. He can contract his abdominal muscles so as to show an undulating movement passing upward and downward; his larynx goes up and down without the aid of the tongue; and he can even cause his pupils either to contract or to dilate, thus showing the influence of the will over so-called involuntary muscular actions. Furthermore, the man, who is a joiner by trade, can contract his subclavius muscle and by thus approximating the clavicle to the first rib he compresses his subclavian artery until the radial pulse disappears. By contracting the diaphragm he is able to displace his heart by four inches. One of his marvellous feats is the "transposition" of the intestines into the space occupied usually by the lungs. By contraction of the abdominal muscles and relaxation of the diaphragm the lungs are compressed to about half of their volume and the intestines are pressed upwards in their place; the transference of the viscera is proved by peristaltic movements visible in the thoracic region and by the x rays. The man trained his muscles under medical supervision for several years until he attained control over almost every muscle of his body.

Advertising by Medical Practitioners.

The condition of the profession in several districts is growing so bad, especially since the laws against unqualified practice are not enforced to any great extent, that some medical men have resorted to advertising and two medical councils have found it necessary to hold discussions on the subject. In Salzburg the dental surgeons (fully qualified and holding the degree of M.D.) who have to meet the competition of the unqualified dentists have been permitted by the council to advertise their consulting rooms and hours of attendance in the ordinary newspapers and the example set by them has induced practitioners in a few other cities to do the same, especially as the council has no actual power to prevent them from doing so. In the Vienna Medical Council on July 8th there was a very lively debate on the subject and it is significant of the prevailing opinion that only a small majority defeated the motion to permit moderate advertising. Meanwhile the Government continues to turn a deaf ear to the wishes of the profession.

Medical Statistics from Lower Austria.

One of the most pleasing results of improved sanitation is the constant decrease of epidemics and infectious disease in Vienna. Thus in 1873 there were 630 cases of small-pox in a population of nearly 2,500,000, but since 1895 the number has never exceeded 20 a year, and fell to two in 1902. In 1904 there were five cases, all of which were imported, and one terminated fatally. This is no doubt the result of compulsory vaccination. The mortality from diphtheria has been falling steadily from 33 per cent. in 1883 to less than 12 per cent. in 1902. In 1902 there were 2280 medical practitioners in Vienna—i.e., one for every 735 inhabitants—whilst the flat country had only one practitioner for every 2000 inhabitants. Unqualified practitioners abounded. These figures have been taken from the "Statistical Year-book for Vienna and Lower Austria, 1904," which comprises a period of 20 years (1884–1904). The only increase of infectious disease is in the case of puerperal fever which shows a constant upward tendency in spite of all measures to check it; 152 deaths were attributed to it in 1904 as compared with 131 in 1900.

Spirochæta Pallida in the Circulating Blood.

At a recent meeting of the Vienna Clinical Society Dr. Raubitschek showed blood films from a patient who suffered from syphilitic erythema maculo-papulatum over his whole body and also from anal condylomata. Dr. Raubitschek pressed the condylomata between two fingers and the exuding liquid was stained by the method of Giemsa. All films showed the spirochæta pallida (Schaudinn). On the same day a drop of blood was obtained in the usual manner from the finger-tip and stained as above mentioned. These preparations gave also clear and definite proof of the presence of the spirochæta. This is the first time that living spirochætæ have been seen in the circulating blood.

A Minute Neuro-fibroma or Suprarenal Adenoma.

At a recent meeting of the Neurological Society Dr. A. Fuchs showed a man who had complained of constant pain under the left costal arch. The pain was increased by pressure or by walking. During the six years of its duration he had noticed that the seat of the pain was at a certain spot from which it radiated. Careful examination revealed the existence of a small hard nodule at this painful point. The nodule, which was of the size of a large pinhead, was excised with a portion of the skin of the abdomen. The pain has since disappeared. Microscopic examination of the nodule, which was supposed to be a simple neuro-fibroma, showed structures which were nearly identical with those of the suprarenal gland. As hitherto it has never been observed that suprarenal formative elements appeared in the ecto-derma (skin of the abdomen) this account must be received with the greatest reserve. Several histologists who saw the microscopic preparations concurred with the diagnosis of adenoma suprarenale subcutaneum.

Echinococcus of the Spleen.

Dr. von Schmarda showed at a recent meeting of the Surgical Society a case in which he had performed splenectomy and resection of the left lobe of the liver on account of echinococcus. The patient, who had been suffering for three years from a swelling in the left hypochondrium, was operated upon under local anæsthesia. The bleeding from the liver was controlled by nine deep sutures and a Mikulicz tampon filled the gap made by the splenectomy. The after history was uneventful. There are only 26 cases of splenectomy recorded and this is the first one where operations on the liver and the spleen were simultaneously performed. Echinococcus of the spleen is a very rare disease, only ½ per cent. of the attacks being located in this viscus.

July 22nd.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Ontario Medical Association: Annual Meeting.

THE twenty-fifth annual meeting of the Ontario Medical Association was held in Toronto on June 6th, 7th, and 8th, under the presidency of Dr. William Burt of Paris, Ontario, the general secretary being Dr. Charles P. Lusk of Toronto. It was the second largest meeting of the association during its quarter of a century of life. The address in medicine was delivered by Dr. W. B. Pritchard of New York city, the title of the address being "The American Disease: an Interpretation." Dr. A. J. Ochsner, the distinguished Chicago surgeon, delivered the address in surgery, which had for its title "Surgery of the Stomach from the Standpoint of the Clinician." Throughout the meeting the contributions were above the usual level, the discussions being keen, interesting, and profitable. Dr. H. B. Anderson of Toronto communicated a valuable paper on Diseases of the Myocardium from a Clinical Standpoint. Dr. George A. Bingham of Toronto contributed an interesting paper on Exophthalmic Goitre and exhibited some patients upon whom he had recently operated. Dr. H. A. Bruce of Toronto reported 500 operations for appendicitis in the past seven years and advocated the calling in of a surgeon at once by the physician as soon as the latter diagnosed the disease. Dr. Graham Chambers of Toronto read some interesting notes on the cutaneous effects observed in hysterical patients. Dr. W. B. Thistle of Toronto read a paper on the Treatment of Intestinal Lesions in Typhoid Fever, in which he remarked that the last 100 cases of typhoid fever under the care of Dr. W. P. Caven and himself in the Toronto General Hospital had been carried successfully through without a single death, and in all the eliminative treatment, of which Dr. Thistle is an ardent advocate, was employed. Dr. Edward Ryan of Kingston, Ontario, showed

several interesting pathological specimens. The others who contributed were as follows:—Dr. J. Biggar (Tilsonburg, Ontario), Broncho-Pneumonia, a Contrast between Rural and Urban Results; Dr. Price Brown (Toronto), the Lymphoid Tonsillar Circle, the Pharyngeal Tonsil; Dr. P. H. Bryce (Ottawa), Types of Immigrants; Dr. George H. Burnham (Toronto), Abnormal Refraction and Eye-Strain; Dr. Caven, Exophthalmic Goitre, exhibition of patients; Dr. F. Fenton (Toronto), Ante- and Post-Partum Examinations; Mr. C. J. C. O. Hastings (Toronto), the Duty of the Profession and the State in Regard to the Mental and Physical Care of our Improperly Cared-for Children; Dr. S. M. A. Hay (Toronto), a Critical Review of the Operations for Suspension of the Uterus; Dr. C. A. Hodgetts (Toronto), On the Establishment of a Department of Public Health for the Province of Ontario; Dr. T. K. Holmes (Chatham, Ontario), a Summary of 266 Laparotomies, with remarks on the technique adopted; Dr. Henry Howitt (Guelph, Ontario), Remarks on the Surgical Treatment of Chronic Nephritis, with notes of cases; Dr. Goldwin W. Howland (Toronto), Compression Paraplegias following Spinal Caries, and the Results of Surgical Intervention for their Relief; Professor A. B. MacCallum (Toronto), Recent Advances in the Study of the Physiology of Gastric Digestion; Dr. Albert A. Macdonald (Toronto), Ectopic Gestation; Dr. H. T. Machell (Toronto), Modified Milk v. Whey Mixtures; Dr. F. W. Marlow (Toronto), Simple Ulceration of the Stomach and Duodenum; Dr. K. C. McIlwraith (Toronto), Clinical Exerience with Labours in Contracted Pelves; Dr. A. McPhedran (Toronto), Evidences resulting from Functional Disturbances of Digestion; Dr. D. Campbell Meyers (Deer Park, Ontario), the Admittance of Certain Forms of Acute Mental Diseases to the Wards of General Hospitals; Dr. James Newell (Watford, Ontario), Report of a Case of Liver Tongue and Report of a Case of Achylia Gastrica; Dr. H. H. Oldright (St. Catherine's, Ontario), a Report of Cases of Electrical Burns and Lesions from Live Wires; Dr. W. Oldright (Toronto), Repair of the Sphincter Ani and Anal Fissure; Dr. Ingersoll Olmsted (Hamilton), Resection of the Splenic Flexure of the Colon—Malignant Disease—with exhibition of patient and specimen; Dr. Charles O'Reilly (Toronto), Remarks on Hospital Management; Dr. C. D. Parfitt (Gravenhurst, Ontario), the Selection of Cases for the Muskoka Free Hospital for Consumptives; Dr. H. C. Parsons (Toronto), Blood Examinations; Dr. J. F. W. Ross (Toronto), Operations for the Immediate Repair of the Genital Lesions of Childbirth; Dr. Rudolf (Toronto), Exophthalmic Goitre, its Medical Treatment; Dr. Paul L. Scott (Toronto), the Clinical Estimation of the Blood Pressure; Dr. C. B. Shuttleworth (Toronto), Exophthalmic Goitre, its Surgical Treatment; Dr. R. W. Bruce-Smith (Toronto), Preludes of Insanity; Dr. T. S. Webster (Toronto), Hysterectomy by Bisecting the Uterus, when indicated; Dr. Hadley Williams (London, Ontario), Tuberculous Adenitis; and Dr D. J. Gibb Wishart (Toronto), the Lymphoid Tonsillar Circle, the Faucial and Lingual Tonsils. It was decided to meet in Toronto in 1906 at the time when it is expected that the British Medical Association will meet there. The following officers were elected for the ensuing year: President, Dr. George A. Bingham, Toronto; treasurer, Dr. F. Fenton, Toronto; secretary, Dr. Charles P. Lusk, Toronto; and assistant secretary, Dr. Samuel Johnston, Toronto.

Ontario Medical Council: Annual Meeting.

The Ontario Medical Council met in Toronto in annual session during the week ending July 8th, when the following officers were elected for the ensuing year: President, Dr. Albert A. Macdonald, Toronto; vice-president, Dr. W. H. Moorhouse, London; registrar, Hon. Dr. R. A. Pyne, Toronto; treasurer, Dr. H. Wilberforce Aikens, Toronto; and auditor, Dr. J. C. Patton, Toronto. During the progress of the meeting several interesting and important matters concerning the profession in the province of Ontario were taken up and attended to. On the report of the official prosecutor being presented action was taken on that part of it which referred to the prosecution of Christian Scientists and it was decided to approach the legislature of the province to seek an amendment to the Medical Act which would empower the council to deal with these people. A special committee was also appointed to wait on the legislature to solicit a substantial grant toward the erection of sanatoriums for consumptives in different sections of the province. Still another matter of importance dealt with was the appointment of a special committee to wait upon the Government to request the establishment of a department of public health for the province. The official prosecutor reported that during the past official year 52 cases had been dealt with. Of this number convictions had been secured in 24 cases, nine had left the country, 11 were dismissed, and six were not proceeded with, which goes to show that quacks do not thrive to any extraordinary extent in the province of Ontario.

July 25th.

NEW ZEALAND.

(FROM OUR OWN CORRESPONDENT.)

Honorary Degree conferred on Dr. D. Macgregor.

THE honour bestowed upon our Inspector-General of Hospitals, Dr. D. Macgregor, by the University of Aberdeen is keenly recognised by the profession here. Previously to being asked to rule the asylums and hospitals Dr. Macgregor was lecturer on moral philosophy at the medical school at Dunedin. There are few more fearless or eloquent servants of this or any other State than the newly elected LL.D.

The Prevention of Tuberculosis.

The movement for providing annexes for the reception and treatment of indigent consumptives is spreading. Christchurch has made a beginning and public meetings have been called in Invercargill. The paper read by the Minister of Health (Sir J. G. Ward) at the last meeting of the Intercolonial Association for the Advancement of Science held at Dunedin has been productive of great good.—Lady Plunket (wife of His Excellency the Governor) opened the Women's Colony of Nurse Maud's Camp at Christchurch last week. The report stated that the percentage of "cures" obtained at this open-air camp for consumptives was higher than that of many of the sanatoriums on the continent of Europe. Nurse Maud is deserving of high praise for her work on behalf of the indigent consumptive.

The Parliamentary Session.

Parliament will meet on June 27th and it is reported that among the measures to be introduced will be a Food and Drugs Bill, a Medical Registration Act, a Hospitals Act, and some amendments to the Public Health Act. There is urgent need for some alterations in the law regulating medical practice. At present, although a New Zealand student is required to follow out a five years' course of study, anyone with a three years' medical education at almost any school in any country can be admitted to our register.

Conference on Dentistry.

The dentists held a most successful conference this month in Wellington. There were upwards of 100 in attendance at some of the meetings. Among the papers of more general interest and value was one by Mr. Thompson of Christchurch on the Care of the Teeth of Children. He advocated among other measures the regular examination by State officers of the teeth of the children attending the State schools. As a result of his advocacy a deputation waited upon Sir J. G. Ward, Minister of Health, who gave them a most cordial reception. He stated that he realised the value of the suggestions made and promised to lay the question of State examination before the Cabinet. The President (Mr. E. Rawson) gave a most interesting account of dentistry in the early days of the colony.

Treatment of Movable Kidney.

At the meeting of the Wellington branch of the British Medical Association last week Dr. W. E. Collins of Wellington read a paper recounting the results of his operation for moveable kidney. The main features in the operation are the stripping of the capsule, more especially at the upper pole; the fixation of the kidney in its normal position while the patient is in the Trendelenburg position; the passing of the ligatures for the anchorage through the lower end of the kidney; and the keeping of the patient in such a position after the operation that there will be the least possible disturbance to the organ caused by coughing, vomiting, &c. The kidney by this method of operation is fixed in its normal position with very little injury to the kidney itself or disturbance of the surrounding parts.

Various Items of News.

His Excellency the Governor presided at a meeting held in Dunedin last week having for its object the raising of funds for additions to the hospital of the "Edinburgh of the Antipodes."—The recently appointed professor of physiology

to the medical school took up his duties at the beginning of the month and was welcomed by his fellow teachers. Hitherto Professor J. H. Scott, who has done so much for the school, has held both the chairs of anatomy and physiology.—At the Intercolonial Medical Congress to be held in September at Adelaide, New Zealand will be represented by Dr. J. M. Mason, the chief health officer of the colony.

The New Zealand International Exhibition.

The Government of New Zealand has decided to hold an international exhibition at Canterbury in that colony from November, 1906, to the early part of April, 1907. One of the principal objects of the exhibition is to demonstrate the resources and possibilities of the colony as a food-producing country and a tourist resort and to bring under the notice of industrial nations the great field for enterprise which it offers for the use of manufactured articles. Applications for space may be lodged with the Agent-General for New Zealand, Westminster Chambers, 13 Victoria-street, London, or with the secretary of the exhibition, Christchurch, New Zealand.

Wellington, June 12th.

Obituary.

GIOVANNI ANGELO CALCINARDI.

THE great and growing Italian colony in South America has lost one of its most prominent representatives in Dr. G. A. Calcinardi, whose death is just reported from Pando in the Uruguayan Republic. Born 70 years ago at Desenzano in the province of Brescia, he studied medicine at Padua, but, like nearly all his generously inspired fellow students, he was swept into the revolutionary vortex and, less fortunate than others, was arrested by the Austrian authorities, tried, and condemned to death. Having, however, escaped from prison he took refuge in Piedmont and completed his studies at Turin and in Paris, taking in due course his degree as doctor. By this time (1860) the movement towards Italian unity and independence was in full career and young Calcinardi was among the volunteers who joined Garibaldi in the descent on the Two Sicilies. In that brilliant raid, at once Quixotic and successful, he was repeatedly under fire but outlived all its dangers to resume professional work in the regular army where he became "capitano medico." Two years afterwards, when Garibaldi raised the cry of "Roma o Morte," young Calcinardi succumbed to the spell of his old leader, threw up his appointment in the army, shared in the disastrous day of Aspromonte, and was again condemned to death, on this occasion by the Italian Government. The sentence, however, was not carried out and in 1867 Garibaldi found his enthusiastic volunteer for the third time by his side in the next raid upon Rome, which closed (once more in disaster) on the field of Mentana. Excluded from his former career on the army medical staff, while pardoned by the Government, he repaired to South America, where in general practice he rapidly realised a fortune which enabled him to gratify his longing to see Italy once more. Settling in Milan he again succeeded in winning a large *clientèle*, his earnings from which he devoted to charity, public and private, on a munificent scale. Interested in the problem of emigration and all that it means for the poor Italian emigrant he took service on board one of the transatlantic liners and followed up his inquiries on American soil. His mission completed he resumed practice again at Milan, whence he moved to Carpesina and then to his native Desenzano. Here he was assisted by his son, by this time a graduate in medicine, whom, for the furtherance of his professional career, he accompanied to Uruguay, where they both practised in concert. Of late years, however, the fatigues of his chequered and self-sacrificing life had begun to tell upon him, exceptionally robust as he was in constitution and character; so, after struggling awhile against daily increasing infirmity, he succumbed on May 27th, leaving behind him in his native Italy and in the Italian colony of South America the memory of a nobly inspired enthusiast in the cause of his country and of his fellow men.

GLOUCESTER HOSPITAL FOR CHILDREN.—The Bishop of Gloucester formally opened on July 26th a new dispensary which has been added to the Gloucester Children's Hospital as a memorial to the late Mr. Gambier Parry.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following were successful in the subjects indicated:—

FINAL HONOUR SCHOOL OF PHYSIOLOGY.—CLASS LIST.

First Class.—O. L. V. Simpkinson, Corpus Christi, and D. Trimmer, Christ Church.

Second Class.—C. N. Binney, Corpus Christi; M. Davidson, Trinity; M. W. Flack, Keble; G. R. Hughes, Exeter; and P. T. Spencer Phillips, New College.

Third Class. P. H. C. Powell, St. John's; J. F. Hornsey, Wadham; S. F. Moore, Trinity; and S. S. Strahan, Keble.

Fourth Class.—R. F. B. Bowes, Queen's; G. A. Hope, New College; W. D. Kennedy, University; A. J. W. Milroy, Christ Church; A. H. Savage, New College; and C. F. M. West, Christ Church.

Passed.—J. R. Kay-Mouat, Hertford.

PRELIMINARY EXAMINATION.—PASS LISTS.

Mechanics and Physics.—H. C. Bazett, Wadham; A. M. Carr Saunders, Magdalen; N. G. Chavasse, Trinity; T. Clear, Balliol; D. Edwardes-ker, Brasenose; H. Hinds, Queen's; G. A. Hutchinson and G. L. M. Inkster, Balliol; E. G. Laws, Non-collegiate; W. O. Little, New College; H. H. W. Lydall, Merton; D. P. McDonald, Oriel; L. N. Morrison, St. John's; W. J. Oliver, Oriel; W. G. Pinching, St. John's; J. P. Purnell Edwards, Christ Church; J. Russell, Balliol; C. J. G. Taylor, University; W. R. Thornton, Trinity; J. T. Wills, Non-collegiate; M. Wilson, Hunter-Blair's Hall; C. C. Wilson, Queen's; R. C. Wingfield, Trinity; and C. F. Younger, New College.

Physics.—T. Bentham, Queen's; G. C. Boyd and M. de G. Boyd, Lincoln; G. W. Carte, New College; A. R. Chavasse and A. W. Donaldson, Hertford; A. M. Lupton, Trinity; J. W. Mason, Jesus; G. H. Udall, Queen's; G. H. Varley, St. John's; and W. E. Waller, University.

Chemistry.—E. Bate, St. John's; H. C. Bazett, Wadham; W. F. G. Blackler, Trinity; G. C. Boyd and M. de G. Boyd, Lincoln; A. J. B. Carrington, University; A. R. Chavasse, Hertford; N. G. Chavasse, Trinity; T. Clear, Balliol; P. G. Doyne, Trinity; D. E. Edwardes-ker, Brasenose; P. R. Fairclough, St. John's; C. L. Garton, Magdalen; T. H. J. Gillam, Hertford; J. K. Hepburn and G. B. Holmes, Queen's; G. A. Hutchinson and G. L. Inkster, Balliol; E. G. Laws, Non-collegiate; J. M. Mason, Jesus; H. G. Morris, University; W. J. Oliver, Oriel; A. S. Roe, Balliol; D. Roy, Wadham; E. P. Sells Christ Church; G. Stanger, Lincoln; C. J. G. Taylor, University College; G. E. Thornton, Oriel; G. H. Udall, Queen's; M. Wilson, Hunter-Blair's Hall; C. C. Wilson, Worcester; R. C. Wingfield, Trinity; J. H. Worthington, Wadham; and C. F. Younger, New College.

Zoology.—P. B. Batchelor, University; H. C. Bazett, Wadham; P. N. Cave, University; G. H. Cross, Balliol; A. W. Donaldson, Hertford; C. C. Gaunt, St. John's; and H. G. Morris, University.

Botany.—P. P. Andrews, University; H. C. Bazett, Wadham; J. L. Birley, University; W. F. G. Blackler, Trinity; A. M. Carr-Saunders, Magdalen; P. N. Cave, University; H. E. Clarke, Jesus; G. H. Cross, Balliol; G. R. Downs, Magdalen; C. C. Gaunt, St. John's; H. O. S. Gibson, New College; G. D. Knox, Balliol; E. L. Pearce-Gould, Christ Church; A. S. Roe, Balliol; H. W. Scott Wilson, Queen's; G. E. Thornton, Oriel; W. W. Wagstaffe, New College; R. O. Ward, Queen's; R. C. Wingfield, Trinity; and T. S. Wright, Brasenose.

UNIVERSITY OF EDINBURGH.—The following degrees and certificates were conferred on July 28th:—

Doctor of Medicine.—Francis John Harvey Bateman, England, M.B., C.M., 1898; Charles Mackie Begg, New Zealand, M.B., Ch.B., 1903; ‡Raphael Aaron Bellilios, India, M.B., Ch.B., 1901; John Francis Gibbs Bent, England, M.B., C.M., 1893; Harry Edward Bower, England, M.B., C.M., 1887; George Edward Bowker, England, M.B., C.M., 1891; Arthur John Brock, Scotland, M.B., Ch.B., 1901; ‡Robert Dods Brown, Scotland, M.B., Ch.B., 1904; ‡James Burnet (M.A.), Scotland, M.B., Ch.B., 1896; Osmund Harry Chapman, England, M.B., C.M., 1884; ‡Harry Lovett Cumming, Scotland, M.B., Ch.B., 1902; ‡James Davidson, Scotland, M.B., Ch.B., 1903; ‡George Augustus Davies (B.A.), England, M.B., Ch.B., 1903; ‡Frank Ingle Dawson, Scotland, M.B., Ch.B., 1902; *William Elliot Carnegie Dickson (B.Sc.), Scotland, M.B., Ch.B. (with first class honours), 1901; ‡Thomas George Boswall Dodds, Scotland, M.B., Ch.B., 1901; ‡Henry John Dunbar, Scotland, M.B., Ch.B., 1902; ‡John Munro Dupont, England, M.B., Ch.B., 1901; *John Mason, Scotland, M.B., C.M. (with first class honours), 1896; *Duncan Campbell Lloyd Fitzwilliams, Wales, M.B., Ch.B., 1902; Edmund Frost, England, M.B., C.M., 1896; *Robert Valpy Fulton, New Zealand, M.B., C.M., 1889 (*in absentid*); Robert Gibson, Scotland, M.B., Ch.B. 1898; Charles Francis Gildry, England, M.B., C.M., 1896 (*in absentid*); Roderick M'Kenzie Grant, Scotland, M.B., Ch.B., 1901; ‡Edward David Wilson Greig (B.Sc.), Scotland, M.B., Ch.B., 1896; ‡Patrick Stevenson Hadaine, Scotland, M.B., Ch.B., 1900; *Andrew Alexander Hall, Scotland, M.B., Ch.B. (with first class honours), 1903; Arthur Rupert Hallam, England, M.B., Ch.B., 1901; ‡Percy William Hampton, Isle of Man, M.B., Ch.B., 1899; ‡Robert Hardie, Scotland, M.B., C.M., 1882 (*in absentid*); ‡Irvine Kemps Hermon, Scotland, M.B., Ch.B., 1899; ‡Alice Marion Hutchison, Scotland, M.B., Ch.B., 1899; Andrew Edwin Hunter, Scotland, M.B., Ch.B., 1901; Hugh Jamieson, Scotland, M.B., C.M., 1882; ‡Peter Jones, Wales, M.B., C.M., 1899; ‡Clement Thomas Cory Kingdon, England, M.B., C.M., 1895; ‡Robert Murray Leslie (M.A., B.Sc.), Scotland, M.B., C.M. (with first class honours), 1892; ‡William Gordon Little (M.A.), Scotland, M.B., C.M., 1894; Robert John McClelland, Ireland, M.B., Ch.B., 1900; John Cunningham McConaghey, India, M.B., Ch.B., 1898; Alastair MacGregor, Scotland, M.B., C.M., 1885; †William McLachlan (B.Sc.), Scotland,

M.B., Ch.B., 1901; ‡James MacNidder, Scotland, M.B., C.M., 1889; James Donald Macrae, Scotland, M.B., C.M. (with second class honours), 1901; ‡George Robertson Mill, Scotland, M.B., Ch.B. (with second class honours), 1901 (*in absentiâ*); ‡Francis Watson More, Scotland, M.B., Ch.B., 1897; ‡Upendra Nath Mukerji, India, M.B., C.M., 1893 (*in absentiâ*); Sarat Kumar Mullick, India, M.B., C.M., 1897 (*in absentiâ*); Charles Graham Murray, Barbadoes, M.B., C.M., 1893; ‡George Stewart Murray, Scotland, M.B., Ch.B., 1901; ‡Alexander Nasmyth, Scotland, M.B., C.M., 1899; William Harwood Nutt, England, M.B., Ch.B., 1903; Thomas Edward Nuttall, England, M.B., C.M., 1892; Alexander Howard Pirie (B.Sc.), Scotland, M.B., Ch.B., 1897; Catherine Mary Richardson, England, M.B., Ch.B., 1900; ‡Robert George Riddell, Scotland, M.B., Ch.B., 1897; ‡Hugh Moreton Roberts, Wales, M.B., Ch.B., 1901; ‡John Keith Alexander Robertson, Scotland, M.B., Ch.B., 1901; ‡William Robertson, England, M.B., C.M., 1893; William Arthur Robinson (M.A., B.Sc.), New Zealand, M.B., Ch.B., 1901; Robert George Robson (M.A.), Scotland, M.B., C.M., 1905; ‡Thomas William Edmondston Ross, Scotland, M.B., Ch.B. (with second-class Honours), 1902; ‡William Elmsley Scott-Moncrieff, Scotland, M.B., C.M., 1893; James Scott Sewell, England, M.B., Ch.B. (with Second-class Honours), 1902; ‡Samuel Ramsay Sibbald, Scotland, M.B., Ch.B., 1900; ‡George Freeland Barbour Simpson, Scotland, M.B., Ch.B., 1896; Alan Butler Slater, England, M.B., Ch.B., 1899; ‡Frederic Skey Stanwell, England, M.B., C.M., 1895; Cecil Edward Stephens, England, M.B., C.M., 1892; ‡Donald Alexander Stewart (M.A.), Scotland, M.B., Ch.B., 1901; Arthur Henry Thompson, England, M.B., Ch.B., 1896; Charles Percivale Bligh Wall, England, M.B., Ch.B., 1897 (*in absentiâ*); ‡Ward Ward-Smith, England, M.B., Ch.B., 1898; and *Benjamin Philip Watson, Scotland, M.B., Ch.B. (with first class honours), 1902.

Master of Surgery.—†Lionel Charles Peel Ritchie, Scotland, M.B., Ch.B., 1900.

* Awarded gold medals for their theses.
† Highly commended for their theses.
‡ Commended for their theses.

Bachelor of Medicine and Master in Surgery.—John Clark, Scotland; Harold Downes, England; George Arthur Grierson, Scotland; and Robert Whitson Telford, Australia.

Bachelor of Medicine and Bachelor of Surgery.—Thomas Addis, Scotland; Francis Aitken, Scotland; James Cyril Dalmahoy Allan, Scotland; Arthur Cecil Alport, England; Alexander Grant Anderson, M.A., B.Sc., Scotland; William Anderson, Scotland; Mukhtar Ahmed Ansári, B.A., India; Francis Baillie, Ireland; George Smith Banks, Scotland; §Duncan M'Farlan Barker, Scotland; James Morgan Barkley, Ireland; George Galen Bartholomew, Scotland; Benjamin Baty, England; Whiteford John Edward Bell, Scotland; Norman Black, Scotland; Richard Bladworth, Scotland; Charles Edward Blair, Ireland; George Blair, Scotland; Richard Alfred Blake, England; Herbert Maughan Brown, England; James William Cairns, Scotland; Thomas Campbell, Scotland; ‡Herbert Macpherson Cargin, Ireland (*in absentiâ*); Norman Scott Carmichael, Scotland; John Chisholm, Scotland; Henry Pattullo Cook, Scotland (*in absentiâ*); Francis William Cragg, England; John Gibson Craig, Scotland; James Alexander Cruickshank, Scotland; William Henry Cusack, Ireland; Arthur Dangerfield, Scotland; Thomas Davidson, M.A., Scotland; ‡James Mollison Dickson, Scotland; Marcus Graham Dill, Scotland; David Eakin, Ireland; Hugh Anderson Edwards, Scotland; Edward Alexander Elder, M.A., B.Sc., Scotland; Chatterton Eric Elliston, England; Henry Felix Fenton, England; Francis Edwin Field, British Guiana; Charles Napier Finn, New Zealand; Noel Constable Forsyth, Scotland; ‡Robert Skeoch Frew, Newfoundland; Willy Gerson Fröhlich, Switzerland; John Frederick Gallaher, Ireland; Louis Patrick Mackenzie Gardner, Scotland; Hugh Selwyn Gaskell, England; William Gemmill, M.A., Scotland; Ernest Gardiner Girdwood, South Africa; James Anderson Glover, M.A., Scotland; John Macpherson Grant, Scotland; Joseph Green, England; §Charlotte Rose Greenfield, England; John Caldwell Grieve, Scotland; Ernest Joseph Clifford Groves, England; §James Andrew Gunn, M.A., B.Sc., Scotland; James Turner Gunn, Scotland; George Hadden, Ireland; John Daniel Harmer, Scotland; Ada Annie Hatchard, England; Alfred Stirling Hendrie, Scotland; William Morton Hewetson, England; Henry Scott Anderson Hogg, Scotland; Jean Smith Hogg, Scotland; John Richard Holgate, England; John Hamilton Hume, Scotland; Joseph Ings, New Zealand; Ada Jackson, England; James Peter Speid Jamieson, Scotland; Solomon Ezekiel Kark, Cape Colony; James Robertson Kerr, Scotland; Ethel Landon, England; John Mure Latider, Scotland; James Lindsay, Scotland; John Lindsay, Scotland; Alexander Patrick Gordon Lorimer, Scotland; James Anderson Loughridge, Ireland; Donald Hector Colin MacArthur, England; Peter M'Diarmid, Scotland; §Peter M'Ewan, M.A., Scotland; Thomas Arthur MacGibbon, B.A., B.Sc., New Zealand; John Douglas M'Kelvie, England; James MacKenzie, Scotland; Kenneth William Mackenzie, Scotland (*in absentiâ*); Murdo MacKinnon, Scotland; Archibald Cotterell M'Master, New Zealand; Stewart M'Naughton, England; §Charles M'Neil, M.A., Scotland; Norman Neil George Cowan M'Vean, Scotland; William Magill, Ireland; §William Joseph Maloney, Scotland; Samuel Edgar Martin, Ireland; Edward Seys Massiah, British Guiana; ‡George Douglas Mathewson, B.Sc., Scotland; Alexander Mathieson, Scotland; David Morley Mathieson, M.A., Scotland; Archibald Ingram Miller, Scotland; Harley Patterson Milligan, England; Charles Edward Sawers Mitchell, Scotland; John Stevenson Mitchell, Scotland; Carel Theodorus Möller, Cape Colony; Hector Baird Morris, Scotland; David Lvall Morrison, Scotland; Howard Mowat, Scotland; Robert Esmond Moyes, Scotland; Edmund Brodie Munro, Scotland; Alexander William Neill, Scotland; Robert Howard Nolan, Ireland; George Percy Norman, England; Arthur John Rushton O'Brien, England; Charles Richard O'Brien, India; Arthur Adolphus Ollivierre, Trinidad; James Stewart Orwin, England; David Hutcheon Paul, Scotland; John Lindesay Pearce, Scotland; §Harold Ernest Rawlence, England; Douglas Gavin Reid, Scotland; Arthur Owen Playford Reynolds, England; William Edward Reynolds, Portugal; James Robert Robertson, Australia; William George Robertson, M.A., Scotland; William Latto Robertson, M.A., Scotland; §Johannes Zacharias Human Rousseau, B.A., Cape Colony; Henry Marcelin Sauzier, Mauritius; Thomas Scoresby-Jackson, England; §William M'Donald Scott, Scotland; William Joseph Burns Selkirk, M.A., Scotland; Alfred Irving Shepheard-Walwyn, England; Douglas William Sibbald, New Zealand; Eustace Melvin Simmers, England; Archibald Simpson, Scotland; Edward Swan Simpson, Scotland; Oliver Smith, England; Stanley Alwyn Smith, England; Thomas Ronaldson Smith, Scotland; Alexander Grant Vernon van Someren, Straits Settlements; Daniel William Standley, Mauritius; Robert Charles Standring-Smith, B.A., England; William John Taggart, Ireland; William Bow Tannahill, Scotland; Annie Florence Theobalds, England; James Alexander Richard Thompson, Scotland; Edward Francis Valenzia, Egypt; Fernand Louis de Verteuil, Trinidad (*in absentiâ*); ‡Philip Sexton Vickerman, New Zealand; Helen Randall Vickers, England; Frances Margaret Wakefield, England; Robert Clive Walker, Scotland; ‡Henry Rverly Arthur Washbourn, New Zealand; Hubert Clinton Weber, British Guiana; Joseph Douglas Wells, England; Frank Phillips Wernicke, England; Andrew Wight, Scotland; Elsie Bowman Wilkie, Scotland; Richard Wilkins, England; Hugh Cameron Wilson, Scotland; §James Young, Scotland; James Theodore Young, Cape Colony.

§ Passed with first class honours.
‡ Passed with second class honours.

Special University Certificate in Diseases of Tropical Climates.—Arthur Cecil Alport, M.B., Ch.B.; Alexander Grant Anderson, M.A., B.Sc., M.B., Ch.B.; Mukhtar Ahmed Ansári, B.A., M.B., Ch.B.; Francis Baillie, M.B., Ch.B.; George Smith Banks, M.B., Ch.B.; Duncan M'Farlan Barker, M.B., Ch.B.; Norman Black, M.B., Ch.B.; Charles Edward Blair, M.B., Ch.B.; Richard Alfred Blake, M.B., Ch.B.; Herbert Maughan Brown, M.B., Ch.B.; Thomas Campbell, M.B., Ch.B.; John Walker Cathles, M.B., Ch.B.; Duncan MacDonald Cochrane Church, M.B., Ch.B. (*in absentiâ*); John Clark, M.B., C.M.; Henry Pattullo Cook, M.B., Ch.B. (*in absentiâ*); Thomas Davidson, M.B., Ch.B.; James Mollison Dickson, M.B., Ch.B.; Robert Skeoch Frew, M.B., Ch.B.; Louis Patrick Mackenzie Gardner, M.B., Ch.B.; Hugh Craigie Gibson, M.B., C.M. (*in absentiâ*); Ernest Gardiner Girdwood, M.B., Ch.B.; Vinayak Ramshandra Gorakshakar, M.B., Ch.B. (*in absentiâ*); John Caldwell Grieve, M.B., Ch.B.; Elizabeth Catherine Gunn, M.B., Ch.B. (*in absentiâ*); John Daniel Harmer, M.B., Ch.B.; Alfred Stirling Hendrie, M.B., Ch.B.; William Morton Hewetson, M.B. Ch.B.; Henry Scott Anderson Hogg, M.B., Ch.B.; Jean Smith Hogg, M.B., Ch.B.; Ada Jackson, M.B., Ch.B.; Solomon Ezekiel Kark, M.B., Ch.B.; James Robertson Kerr, M.B., Ch.B.; Ethel Langdon, M.B., Ch.B.; James Lindsay, M.B., Ch.B.; James Anderson Loughridge, M.B., Ch.B.; Peter M'Ewan, M.A., M.B., Ch.B.; Kenneth William Mackenzie, M.B., Ch.B. (*in absentiâ*); Archibald Cotterell M'Master, M.B., Ch.B.; Norman Neil George Cowan M'Vean, M.B., Ch.B.; William Joseph Maloney, M.B., Ch.B.; Samuel Edgar Martin, M.B., Ch.B.; Edward Seys Massiah, M.B., Ch.B. Alexander Mathieson, M.B., Ch.B.; Charles Edward Sawers Mitchell, M.B., Ch.B.; Edmund Brodie Munro, M.B., Ch.B.; Alexander William Neil, M.B., Ch.B.; George Percy Norman, M.B., Ch.B.; Arthur John Rushton O'Brien, M.B., Ch.B.; Arthur Adolphus Ollivierre, M.B., Ch.B.; William Edward Reynolds, M.B., Ch.B.; William George Robertson, M.A., M.B., Ch.B.; Henry Marcelin Sauzier, M.B., Ch.B.; William McDonald Scott, M.B., Ch.B.; Douglas William Sibbald, M.B., Ch.B.; Edward Swan Simpson, M.B., Ch.B.; Thomas Ronaldson Smith, M.B., Ch.B.; Alexander Grant Vermont van Someren, M.B., Ch.B.; Daniel William Standley, M.B., Ch.B.; Kenneth Andrew Moody Stuart, M.B., Ch.B. (*in absentiâ*); Annie Florence Theobalds, M.B., Ch.B.; James Alexander Richard Thompson, M.B., Ch.B.; Edward Francis Valenzia, M.B., Ch.B.; Vattaparampil Sankara Valiathan, B.A., M.B., Ch.B.; Fernand Louis de Verteuil, M.B., Ch.B. (*in absentiâ*); Robert Clive Walker, M.B., Ch.B.; Hubert Clinton Weber, M.B., Ch.B.; Joseph Douglas Wells, M.B., Ch.B.; Frank Phillips Wernicke, M.B., Ch.B.; Andrew Wight, M.B., Ch.B.; and Hugh Cameron Wilson, M.B., Ch.B.

The following Fellowships, medal, scholarships, and prizes have been awarded:—Goodsir Memorial Fellowship, Duncan Campbell Lloyd Fitzwilliams, M.D., Ch.B.; Syme Surgical Fellowship, Frank Inglis Dawson, M.D., Ch.B.; Milner Fothergill Medal in Therapeutics, John Eason, M.D., C.M.; Ettles Scholarship, William Joseph Maloney, M.B., Ch.B., and William M'Donald Scott, M.B., Ch.B., equal; Allan Fellowship in Clinical Medicine and Clinical Surgery, Harold Ernest Rawlence, M.B., Ch.B.; Buchanan Scholarship in Gynæcology, Peter M'Ewan, M.A., M.B., Ch.B.; James Scott Scholarship in Midwifery, William Joseph Maloney, M.B., Ch.B.; Mouat Scholarship in Practice of Physic, George Douglas Mathewson, B.Sc., M.B., Ch.B.; Charles Murchison Memorial Scholarship in Clinical Medicine, John Pool M'Gowan, M.A., M.B., Ch.B.; M'Cosh Graduate's and Medical Bursaries, William Joseph Maloney, M.B., Ch.B.; Beaney Prize in Anatomy and Surgery, William M'Donald Scott, M.B., Ch.B.; Conan Doyle Prize, Johannes Zacharias Human Rousseau, B.A., M.B., Ch.B.; Dorothy Gilfillan Memorial Prize, Charlotte Rose Greenfield, M.B., Ch.B.; Gunning Victoria Jubilee Prize in Zoology, Alexander Ninian Bruce, B.Sc.; Whiteman Prize in Clinical Medicine, Charles M'Neil, M.A., M.B., Ch.B.; and the Pattison Prize in Clinical Surgery, Fleet Floyd Strother Smith.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

—At the sittings of the Scottish Conjoint Board held in Glasgow the following candidates passed the respective examinations:—

First Examination (five years' course).—Robert Henry Jones, Pen-y-groes; Dennis Cogan, Cork; Thomas Sholto Douglas, Glasgow;

Jehangir Cawasji Balsara, Portobello; William George Hugh Brooks, Portobello; Robert Stobo Watt, Glasgow; Phiroza Malabari, Glasgow; and Daniel Murphy, Edinburgh.

Second Examination (five years' course).—Matthew H. Fleming, Glasgow; Walter Riddell, Glasgow; George Lindsay Irwin, Glasgow; Alexander Paul Dias, Portobello; and Abraham David Woolf, London.

Second Examination (four years' course).—George Munro Macleod, Glasgow.

Third Examination.—Hugh Graham Anderson, Newlands, Glasgow; James Logan, Maryhill; John Dawson, Queenstown, Ireland; Andrew Baxter, London; Alexander Dick, Belfast; John Arthur Smith, Kelvinside; and Kenneth James Logan Bannerman, Partick.

Final Examination (and admitted Licentiate of the Three Cooperating Authorities).—William Noble Walker, Greenock; William Wallace Dempster, Belfast; William Patrick Timmon, Navan, Meath, Ireland; Whitfield de Witt Henty, Edinburgh; Joseph Owens, Glasgow; John McNamara, Newtongore, Carrick-on-Shannon; Lorris Elijah Borden, Edinburgh; William Nicholas Alexander, Dublin; Herbert M'Master, Belfast; Jehangir Cawasjee Balsara, Portobello; Julius Edward Streeter, Edinburgh; John Priestley Newton, Glasgow; Jesudasan Swamiadian Lamech, Edinburgh; James Taylor, Dunalister, Castlehead, Paisley (with honours); Alexander Dick, Belfast; and John Gilbert Heathcote, Ardwick, Manchester.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—Mr. Arthur Digby Besant, B.A., F.I.A., has been appointed secretary of this society and Mr. W. J. H. Whittall remains principal officer with the title of actuary.

NOISY DOGS.—At the Exeter police-court on July 25th a butcher was fined £1 and costs, under the new by-law, for keeping noisy dogs to the annoyance of his neighbours.

DONATIONS AND BEQUESTS.—Mr. J. Storrs Fry has given £1000 towards the cost of the isolation wards of the Bristol General Hospital, which are shortly to be erected at an estimated cost of about £5000.—The Royal Dental Hospital of London, Leicester-square, has received a donation of £100 from the Worshipful Company of Grocers.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bills Withdrawn.

Two Bills have been withdrawn this week of which a word may be said. One was to prohibit persons who are not by examination and registration legally qualified to practise medicine and surgery from carrying on business as medical practitioners by means of companies formed under the Joint Stock Companies Acts. The other was to prohibit the carrying on of dental practice by unqualified persons by means of limited companies. Both were presented by Sir JOHN BATTY TUKE and supported by Sir JOHN BRUNNER, Mr. JAMES CAMPBELL, Mr. CATHCART WASON, Sir MICHAEL FOSTER, and Sir WALTER FOSTER. To have had any chance of success they should have been introduced in the early days of the session; they were not brought forward till a few weeks ago. The only advantage obtained, and, of course, it is one that is not to be ignored, is that the Bills have been printed and circulated.

The Registration of Nurses.

The Select Committee of the House of Commons appointed to consider the question of providing for the registration of nurses has shown expedition in agreeing upon its report. Elsewhere the text is given. It is probable that an effort will be made early in next session to secure Government action upon the lines of the report.

HOUSE OF COMMONS.

WEDNESDAY, JULY 26TH.

Midwifery Orders for Poor Women.

Sir WALTER FOSTER asked the President of the Local Government Board whether he had considered the difficulty which poor women might experience in getting assistance in their confinements in consequence of unregistered midwives being afraid to attend, as in the Smallburgh union; and whether he could take steps to point out to boards of guardians the duty of the relieving officer to grant midwifery orders to women destitute of the means of procuring medical attendance.—Mr. GERALD BALFOUR answered: At present I am not aware that boards of guardians and relieving officers generally do not realise their duty in this matter but I am making some inquiry on the subject and particularly as regards the Smallburgh union.

THURSDAY, JULY 27TH.

The List of Poisons.

Sir JOHN LENG asked the Home Secretary whether, in view of the fact that the Council of the Pharmaceutical Society of Great Britain recently resolved that each of ten different articles should be declared a poison within the meaning of the Pharmacy Act, 1868, and that, in conformity with the report of the Departmental Committee on Poisons and the views of coroners and medical men those ten articles included acetanilide, soluble salts of oxalic acid, and sulphonal, he would explain why these three articles were excluded from the list of poisons approved by the Lords of the Privy Council and advertised accordingly in the *London Gazette* of July 18th.—Mr. AKERS-DOUGLAS answered: I have communicated on this matter with the Lord President of the Council, who informs me that the Lords of the Privy Council, after consideration of the substances covered by the terms of the resolution of the Pharmaceutical Society, and after taking expert advice upon the subject, decided, in the exercise of the discretion with which they are invested by Section 2 of the Pharmacy Act, 1868, to exclude from their approved list the three substances named in the question.

Roman Catholic Nurses in Southern Nigeria.

Mr. SLOAN asked the Secretary of State for the Colonies whether the High Commissioner of Southern Nigeria acted on his own initiative in inviting at the beginning of the present year a sisterhood of French nuns to Calabar to take charge of the native Government hospital, where the inmates were non-Catholic; for what period these nuns had been engaged; and whether it was intended to retain their services in preference to nurses who were not connected with religious orders.—Mr. LYTTELTON answered: The proposal that two Roman Catholic sisters should be employed as nurses in the native hospital at Calabar (which is a separate institution from the European hospital) was originally made to the Protectorate Government by the head of the Roman Catholic Mission at Calabar in September, 1903. There had previously been no women nurses at the native hospital and, as the proposal received the support of the principal medical officer and of the Acting High Commissioner, it was accepted on terms which were referred to, and approved by, me. It was stated in the terms of agreement that no undertaking could be given that the sisters would be employed for any stated period but if the system is found to work well I see no reason, on the information before me, why it should be changed.

Mosquito Nets and Fever.

Mr. CATHCART WASON asked the Secretary of State for the Colonies whether he was aware that railway employés in West Africa were constantly stricken with fever through old and defective mosquito nets and whether he would give instructions that the nets in use should be constantly reported on and that any employé refusing or neglecting to use the same should be liable to instant dismissal.—Mr. LYTTELTON replied: I am not in a position either to corroborate or to deny what the honourable Member alleges as to the causing of fevers. I cannot, however, undertake to direct the holding of inquisitions as to whether railway employés use their nets or not. These employés are adult skilled workmen and must be regarded as having some personal intelligence and responsibility.

THE REGISTRATION OF NURSES: REPORT OF THE SELECT COMMITTEE.

The Select Committee of the House of Commons appointed to consider the expediency of providing for the registration of nurses has presented the following report to Parliament:—

The committee has examined 34 witnesses, among whom are included members of the medical profession, matrons of hospitals, superintendents of nursing institutions, nurses whose experience has been gained abroad as well as nurses who carry on their occupation in this country, a representative of the male nurses, representatives of various institutions and public bodies, including the Civil Service, besides ladies and gentlemen who are not professionally employed but who have given much time and work to the management of hospitals and asylums and to the study of nursing questions both in the centres of population and in the rural districts. Amidst many divergent views met with in this evidence there is a general opinion in favour of some change in the conditions under which nursing is carried on. The committee has observed this tendency in the evidence of the medical profession and in that of the nurses themselves. The evidence shows that a considerable improvement has taken place of late, both in the class of persons who undertake nursing and in the conditions under which they obtain their training and carry on their occupation. It has been asserted in some quarters that registration is rendered requisite by reason of the amount of illegality, immorality, and scandal which at present continues undiscovered and unchecked. It is contended that registration would be an efficient instrument against these scandals and would safeguard the public. In the judgment of the committee, while registration might prove a means towards checking some abuses no evidence which has been brought forward substantiates a general charge of moral delinquency. On the other hand, there is a general concurrence of opinion that in the interests of the nurses and of the public further improvement is both desirable and practicable and the committee considers that the desire for coördination of the various training schools, although not universal, is widespread. Upon the question of what changes in the conditions of nursing are desirable strong opinions are held and vigorous expression has been given to them. In these circumstances unanimity could not be looked for. The principal suggestions laid before the committee are:—(*a*) Registration of individual nurses; (*b*) registration of training schools for nurses; and (*c*) licensing of nursing homes, institutions, and societies which supply or employ nurses. The committee is agreed that it is desirable that a register of nurses should be kept by a central body appointed by the State and that, while it is not desirable to prohibit unregistered persons from nursing for gain, no person should be entitled to assume the designation of "registered nurse" whose name is not upon the register. It recommends that this central body should be set up by Act of Parliament and that its constitution should be defined in the Act, as was done in the case of the Central Midwives Board. The central body should consist of matrons, nurses, and representatives of the medical profession, of training schools for nurses, and of the public. The committee considers it desirable that the number of representatives should be kept within reasonable limits; it suggests 11 as a convenient number and recommends that it should never exceed 15. The committee recommends that the central body should admit to the register of nurses such nurses as have had a training at a recognised training school for nurses for a period to be determined by such body, and have satisfied their training school, whose certificate they must hold, stating that they are equipped with the knowledge and experience requisite for nursing and that they are of good character. It also recommends that the central body should decide what constitutes a recognised training school for nurses, taking into consideration the number of beds, the accommodation for probationers, the facilities

afforded for learning, and the general standard and conduct of the examination; for this purpose the central body should have the power of inspection. The committee further recommends that the examination be held at, and by, the training school. For the purpose of defraying the expenses of the central body a small registration fee should be charged. The committee considers that this fee should not exceed one guinea. The committee has heard a large amount of evidence on the subject of the necessary period of training at a school. The great bulk of this evidence points to three years as the requisite period of training. It is impressed with the advisability of such a period but it recognises that a stereotyped rule might operate unfortunately. It therefore recommends that the minimum period should not be fixed by Act of Parliament but should be left to the discretion of the central body. There should be an annual publication of the register of nurses. For this purpose the central body should make provision for striking off the register the names of those nurses who have died or who have ceased nursing, and also of those nurses who, in the opinion of the central body, have been guilty of serious misconduct in the discharge of their duty or of moral delinquency. With regard to existing nurses the committee is of opinion that those who can produce evidence satisfactory to the central body both as regards efficiency and character should be placed upon the register on payment of the registration fee. The committee is of opinion that it should be the duty of the central body at a date not later than four years after the passing of any Act for the registration of nurses to submit a report to the Privy Council on the advisability of instituting a separate register of nurses whose training is of a lower standard than that laid down for "registered nurses." The claims for registration of mental or asylum nurses have been laid before the committee. It is of opinion that a separate register of "registered asylum nurses" should be kept by the central body to which should be admitted the names of nurses who have served for not less than three years (in not more than two asylums), and have received the certificate of the Medico-Psychological Association, and can produce satisfactory certificates of good character. An analogous but separate question has come before the committee—namely, the treatment of nursing homes and institutions. Nursing homes are deemed to include all homes and places conducted for profit where patients are taken in for treatment. By nursing institutions are meant those societies or bodies which supply nurses to the public. The evidence laid before the committee has led it to consider the licensing of such homes and institutions to be highly desirable. The licence should be issued by the county or county borough authority in whose area the home or institution is situated, and no such home or institution should receive the licence unless it is conducted in conformity with requirements to be laid down by that authority. The county or county borough authority should be empowered to draft regulations to be approved by the Local Government Board and to appoint inspectors who should have the right of entry and inspection. It should be a condition of such licence that when a nurse employed in a nursing home or sent out by a nursing institution is not a "registered nurse" the fact shall be definitely stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CAMERON, WILLIAM JOHNSTONE, M.B., Ch.B. Edin., has been appointed Public Vaccinator to Mildura, North-Western District of Victoria, Australia.

CLAY, ROBERT HOGARTH, M.D., M.R.C.P. Edin., has been appointed Honorary Medical Adviser to the Devon and Cornwall Home for Consumption, Didsworthy.

COLLIER, H. W., M.B., B.S., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

CORBETT, W. E. MANDERSON, L.R.C.P. & S. Irel., has been appointed Honorary Medical Adviser to the Devon and Cornwall Home for Consumption Didsworthy.

GRAY, COLIN, M.B., Ch.B. Melb., has been appointed *pro tem.* Public Vaccinator for the Midland District, Victoria, Australia.

HOPE, WILLIAM WAUGH, M.B., Ch.B. Melb., has been appointed *pro tem.* Acting Officer of Health for the Shire of Colac, Victoria, Australia.

INGHAM, JAMES HERBERT IVEY, M.B., Ch.B. Melb., has been appointed Public Vaccinator for the North-Western District and to be Acting Health Officer for the Shire of Dimboola, Victoria, Australia.

JACKSON, GEORGE, F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Medical Adviser to the Devon and Cornwall Home for Consumption, Didsworthy.

LINDSEY, COLIN DUNROD, M.A., M.D., B.C., D.P.H. Cantab., has been appointed Honorary Medical Adviser to the Devon and Cornwall Home for Consumption, Didsworthy.

MAURICE, W. B., M.R.C.S., L.R.C.P., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

ROBINSON, W., L.R.C.P., L.R.C.S., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

SPRING, WILLIAM AMBROSE, M.B., Ch.B. Melb., has been appointed *pro tem.* Acting Officer of Health for the Shire of Ballarat, Victoria, Australia.

TAYLOR, MARK RONALD, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health of Helston, Cornwall.

TOYE, EDWIN JOSIAH, M.D., B.S. Lond., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Medical Officer of Health for the Northam (Devon) Urban District Council.

TRIADO, A. J. J., M.B., Ch.B. Vict., has been appointed District Medical Officer of Lawlers, West Australia.

WEBBER, H. WOOLMINGTON, M.D., M.S. Lond., F.R.C.S. Edin., has been appointed Honorary Medical Adviser to the Devon and Cornwall Home for Consumption, Didsworthy.

WOOLICOMBE, WALTER LEY, F.R.C.S. Edin., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Medical Adviser to the Devon and Cornwall Home for Consumption, Didsworthy.

WRIGHT, EDWARD ARTHUR, M.B., M.S. Edin., has been appointed Honorary Consulting Surgeon to the Huddersfield Infirmary.

YOUATT, LEONARD, M.B., B.Ch., D.P.H. Vict., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Prescot District of the county of Lancaster.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALDERSHOT URBAN DISTRICT COUNCIL.—Medical Officer of Health and Superintendent of the Isolation Hospital. Salary £300 per annum (being £275 as Medical Officer of Health and £25 as Medical Superintendent of the Isolation Hospital, &c.).

BIRKENHEAD BOROUGH HOSPITAL.—Senior and Junior Resident House Surgeons. Salaries £100 and £80 respectively, with fees.

BOURNEMOUTH, ROYAL VICTORIA HOSPITAL.—House Surgeon. Salary £100 per annum, with board and lodging.

BOURNEMOUTH, ROYAL NATIONAL SANATORIUM.—Resident Medical Officer. Salary £10 per month, with board, residence, and washing.

BURY INFIRMARY.—Senior House Surgeon. Salary £110, with board, residence, &c.

DOUGLAS, ISLE OF MAN, NOBLE'S ISLE OF MAN HOSPITAL AND DISPENSARY.—Resident House Surgeon, unmarried. Salary £80 a year, with board and washing.

EXETER CITY ASYLUM.—Assistant Medical Officer. Salary £150 a year, with board, lodging, and washing.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £100, with board, residence, and laundry. Also Assistant House Surgeon. Salary £50, with board, residence, and laundry.

IRELAND, MEDICAL SCHOOL, ROYAL COLLEGE OF SURGEONS.—Senior Demonstrator of Anatomy. Stipend £100 per annum.

KENSINGTON WORKHOUSE AND INFIRMARY.—Second Assistant Resident Medical Officer. Salary £80 per annum, with apartments, board, and washing.

LISTER INSTITUTE OF PREVENTIVE MEDICINE.—Assistant Bacteriologist. Salary £150 per annum.

NEWCASTLE-UPON-TYNE, COLLEGE OF MEDICINE (UNIVERSITY OF DURHAM).—Lecturer in Medical Jurisprudence.

ROXBURGH DISTRICT ASYLUM, Melrose, N.B.—Assistant Medical Officer. Salary £140 per annum, with board, rooms, &c.

SALOP INFIRMARY, Shrewsbury.—House Surgeon. Salary £100 per annum, with board, washing, and residence.

SHEFFIELD ROYAL INFIRMARY.—Junior Assistant House Surgeon. Salary £52 per annum, with board, lodging, and washing. Also Junior House Physician. Salary £60 per annum, with board, lodging, and washing.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician. Salary £100 per annum, with rooms, board, and washing.

STRAITS SETTLEMENTS, MUNICIPALITY OF THE TOWN OF SINGAPORE.—Assistant Municipal Health Officer. Salary £400 per annum, rising to £450.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Westbury, in the county of Salop; and at Gargrave, in the county of York.

Births, Marriages, and Deaths.

BIRTHS.

BABTIE.—On July 31st, at Carlisle-mansions, S.W., the wife of Lieutenant-Colonel W. Babtie, V.C., C.M.G., Royal Army Medical Corps, of a daughter.

MICHÔD.—On July 28th, at Roma, Queensland, the wife of F. A. Hope Michôd, M.B. Lond., M.R.C.S., L.R.C.P., of a son.

MARRIAGE.

BATESON—GLADSTONE.—On July 26th, at Childwall Parish Church, Surgeon-Major John Francis Bateson, Coldstream Guards, to Helen Steuart, daughter of Robert Gladstone, of Woolton Vale, near Liverpool.

DEATHS.

BLAKE.—On July 31st, at Seymour-street, W., Edward Thomas Blake, M.D., M.R.C.S. Eng., aged 63 years.

FRAZER.—On July 26th, at Elmhurst, Bournemouth, William Frazer, M.D., aged 54 years.

GRANT.—At 25, Dundas-street, Edinburgh, on July 27th, Louisa Elizabeth, widow of the late James Dundas Grant, Advocate, and mother of J. Dundas Grant, Leonard Grant, C. Graham Grant, and Hope Grant, London, in her eighty-first year.

MORRIS.—On July 30th, at Hamilton House, Leamington, Joseph Morris, M.R.C.S., L.R.C.P., L.S.A., aged 70 years.

OAKESHOTT.—On July 27th, of pneumonia, Walter Field Oakeshott, M.D., M.R.C.S., L.R.C.P., of Lydenburg, Transvaal.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

IMPERTINENT ADVERTISEMENT.

To the Editors of THE LANCET.

SIRS,—Our attention has been called to your article in the current issue of THE LANCET dealing with Mr. Samuda's letter. We fail to understand your reasons for claiming that that letter was "not intended for publication." Surely you must have imagined this, for we should not for a moment think of writing you a letter "not intended for publication," knowing full well that you would at once publish or comment upon it. We will not deal at any length with your main point relative to our typist's errors, as we do not consider this kind of thing is at all interesting to the public. As you do not appear to be prepared to allow us to answer your various accusations we have been compelled to take immediate steps to protect ourselves against the unfair remarks made in your three recent issues, and unless you can see your way to give us the undertaking asked for by Mr. Samuda in his last communication we shall send a slip as per enclosed proof to the whole of the medical practitioners in the British Isles. We have no wish to waste money in this way, but we must have fair play, and you had no right whatever to comment upon a scheme of ours without fastly hearing our side of the question. Furthermore, you have in each instance gone out of your way to ridicule the scheme. For instance, you use the word "patients," whereas we invariably used the word "friends." You also accuse us of trying to bribe the medical practitioner, whereas we have never done anything of the kind, for any sane man after reading our letters would readily see that the entire scheme was not only *bond-fide* but in accordance with ordinary commercial methods. We are further convinced that the person who wrote the article in question had in his mind the fact that we had not reciprocated by placing advertisements with you after the special notice you gave to the "Avoca" cigars in May, 1903. We had our own reasons for not using your journal and at the moment there is no necessity for us to give further particulars on this score.

You must admit that you have done us a considerable amount of damage and no doubt it would have paid us far better had we spent a few pounds with you during the past two years; it is now our duty to at any cost undo the harm you have done us so we leave it entirely with you as to whether you allow us the use of your columns for this purpose or whether we send out, not only the enclosed slip, but a special circular letter dealing with the whole subject, and in particular setting forth of the facts giving the dates of your various applications for advertisements and the reasons of our refusal. In the whole of our business experience we have never published a testimonial from a customer, but our article could be made very interesting were we to utilise all the facts at our disposal, for it is not always the leading lights of a journal who criticise and contradict their own previous statements.

Yours faithfully,
J. SAMUDA AND CO., LIMITED,
F. E. ADAMS, Managing Director.

34, Leadenhall-street, London, E.C., August 1st, 1905.

The "slip" alluded to, which is printed partly in red ink, is as follows:—

UNRELIABLE JOURNALISM.

The *Lancet*, May, 1903.

"We have carefully submitted the Cigars to a series of tests, and find the tobacco is of excellent quality," etc.

The *Lancet*, July, 1905.

"We know nothing of the 'AVOCA' Cigars."

NOTE.—Between May, '03, and July, '05, Mr. Samuda had firmly refused all the *Lancet's* requests for advertisements—

Enough said!!!

Full copies of both articles sent post free on application to
J. SAMUDA & Co., Ltd., 34, Leadenhall-street, London, E.C.

With regard to the above letter and slip we need only point out that the words taken from THE LANCET of May 2nd, 1903 (which it will be noticed are not correctly quoted), were contained in the following analytical notice:—

CIGARS (FREE FROM ARSENIC).

(THE BRITISH AND AMERICAN CIGAR MANUFACTURING CO., 34, LEADENHALL-STREET, LONDON, E.C.)

The statement has reached us more than once that tobacco leaf occasionally contains arsenic, but we have never been able to substantiate it. There is, however, reference to the presence of arsenic in the tobacco smoked in New Zealand, which is obtained from the United States, in a paper on New Zealand Cancer Statistics in the *Polyclinic* for August, 1902, and in the same number of that journal Mr. Jonathan Hutchinson discusses the question of arsenic cancer and arsenic in tobacco. Of course, a source of arsenic in tobacco might be added glucose or arsenic might possibly be derived from the soil having been treated with impure superphosphate. We have carefully submitted the cigars sent to us by the above company to a series of tests for the most minute amount of arsenic, but in no instance was there the slightest evidence of the presence of this poisonous metal. The tobacco is of excellent quality and in good condition, yielding, when smoked, a pleasing aroma.

It will be seen that the cigars were submitted to us by "The British and American Cigar Manufacturing Co," so evidently the name of the firm has been changed or the business has been sold as the address is the same. Even if we had been aware when writing the article of July 22nd, 1905, that the cigars alluded to were of the same manufacture as those noticed in our Analytical Record we consider that we were quite justified in saying that we knew nothing of the "Avoca" cigars after the lapse of more than two years. We have thought it right to publish the letter of the Managing Director of J. Samuda and Co., Limited, and we shall make no further reference to his impertinent insinuations with regard to ourselves and our motives. Nevertheless, we are willing, as we always wish to be fair, to publish any explanation from J. Samuda and Co., Limited, which is phrased in a proper and courteous manner.—ED. L.

DIFFICULTIES UNDER THE VACCINATION ACTS.

To the Editors of THE LANCET.

SIRS,—As a constant reader of your valuable journal I would like a little advice from you or from one of your readers on the following. I went to day to vaccinate a twin child. I was told that the child, four months old, had been visited by three other people: first, the vaccination officer; second, a young man; and third, the public vaccinator himself. My patients had to withstand this and also kind promises of return visits although they each were told that their own medical man had done one child and intended doing the second. Now this is the second case which has occurred within a few days and I should like to know if something cannot be done to stop it. The child is not six months old and, therefore, should be let alone until then. I for one should like to have advice before one acts in the matter as to the proper course to pursue.

I am, Sirs, yours faithfully,
July 31st, 1905. A.

*** The Vaccination Acts provide that if a child has not been vaccinated by the time he or she is *four* months old (not *six* months as stated) the name of the child is sent by the vaccination officer to the public vaccinator; the latter is obliged by statute to visit the child and "to offer" to vaccinate. If there is any reasonable ground for postponing the operation a postponement must be made. For this visit and postponement, whether by certificate or not, the public vaccinator receives no fee. He gets no fee unless he actually does vaccinate the child. Further, a proportion of his earnings for public vaccination is drawn from "grants"—i.e., bonuses earned by certain standards of work in his district, one of the factors being the proportion of primary vaccinations to births. This system of payments has the natural effect of making both vaccination officers (for the system is applied to them) and public vaccinators hunt up cases when they remain unvaccinated. The public vaccinators are not responsible for the system and we fancy that they would gladly dispense with it. We hope to deal more fully with the matter in a future issue.—ED. L.

PREGNANCY LATE IN LIFE.

To the Editors of THE LANCET.

SIRS,—Having read the annotation under this heading in your issue of July 15th and the subsequent correspondence I feel compelled to communicate the fact that in 1882 while acting as assistant in the practice of Dr. Edmund Hargreaves of Sheffield I delivered a primipara, aged 59 years, of a healthy male child. She had been married 19 years and her husband was aged 71 at the time of her confinement. She was three days in labour before I delivered her instrumentally without an anæsthetic, which was not much used in provincial practice in midwifery cases at that time but she bore her suffering stoically, made an excellent recovery and resumed her household duties within three weeks. The husband was a hale patriarchal-looking man, leading an active outdoor country life, while she was a sturdy specimen of rural womanhood. They each looked the age stated by them. The birth took place at the village of Manor Hill where the couple had lived for many years and where they had the respect of all their neighbours.

I am, Sirs, yours faithfully,
W. G. MCDOWELL.

Regent's Park-road, Finchley, N., July 20th, 1905.

THE DAVID LEWIS COLONY.

IN the report of the annual meeting of the Medico-Psychological Association of Great Britain and Ireland, which appears in THE LANCET of July 29th, we mentioned that Dr. Alan McDougall, in a paper upon the David Lewis Colony, stated that a uniform charge of 14s. was made to adult colonists. It should be added that more private accommodation can be supplied in the colony at charges of 30s. or 50s. a week. The latter charge covers the expense of a private bedroom and the former charge that of a private sitting-room shared by ten colonists.

"DR. WALFORD BODIE" AND HIS TITLES.

THE following amusing letter has appeared recently in the Aberdeen *Evening Express*:—

Sir,—I have just received a copy of your issue of the 11th inst. containing a report *re* the above. As your correspondent has not given you all the facts and as I am anxious that my fellow-townsmen should know the full particulars of the case I should feel obliged if you would grant me space in your valuable paper to allow me to give your readers a full explanation.

In the first place I may tell you that I instructed my counsel, Mr. Avory, K.C., to admit that I had committed a technical offence, as my manager had omitted to add "U.S.A." after my M.D. degree when he sent the bill matter to the Camberwell Palace of Varieties. Still this omission does not take away the fact that I am a duly-qualified M.D. of a recognised university of America, chartered by the United States Government to confer degrees—a university of which several of our biggest practitioners hold degrees, the college in question being the Barrett College, Carolina, U.S.A. I hold my diplomas from said college as M.D. (Doctor of Medicine) and C.M. (Master of Surgery). I also hold diploma as D.Ph. (Doctor of Philosophy) and D.Sc. (Doctor of Science) and Medical Electric Therapeutics of the Chicago College of Medicine and Surgery. My English degrees and titles are are follows: F.R.C.I. (Fellow of the Royal Colonial Institute, London), F.R.M.S. (Fellow of the Royal Meteorological Society, London), F.R.W.S.M. (Fellow of the Royal Worshipful Company of Spectacle Makers, London), F.S.Sc. (Fellow of the Society of Arts, Letters and Literature of London), M.S.A. (Member of the Society of Arts, London), of which society the Prince of Wales is president, the last to receive the honorary title being the King of Spain.

I have also attended the Guildhall, London, and have paid my fee and been nominated, and hope, when I return to town, to be granted the freedom of the City of London, my name on the list being next to Lord Curzon's. I was elected F.R.C.I. along with Lord Tennyson and several other men of note, so you will see, sir, that, in my short professional career, I have done nothing that any of my fellow-townsmen need be ashamed of. I have tried to uphold the dignity of my country and my native town; and I think, sir, that as a young man, you must admit I have been fairly successful. The sensation I have created in the great metropolis as a public demonstrator of the science of hypnotism, electricity, and bloodless surgery has been admitted by the press and public of London to be unprecedented.

I return to London in October and am booked at all the leading West-End halls at the biggest salary ever paid to any artiste, and also specially engaged by Oswald Stoll, Esq., of the Coliseum, London, to appear at all his Empires, &c.

And, now, sir, as you are a lover of fair play and having a little claim on you as a native of the Granite City, I trust you will kindly grant me space in your widely-read paper to insert this letter to show my fellow-townsmen my true position under the circumstances.—Thanking you in anticipation,

I am, &c.,
WALFORD BODIE,
M.D., C.M., D.Ph., D.Sc., U.S.A.; F.R.C.I., F.R.M.S., M.S.A. Lond.

11, Arundel-place, Leicester-square, London, July 12th, 1905.

P.S.—Your report did not state that I was so pleased with the magistrate's decision that, in addition to the fine, I handed the clerk of the court £5 for the poor-box.

Re the above, Mr. P. J. Anderson, M.A., LL.B., librarian, University of Aberdeen, says in the course of a letter published by our contemporary on July 15th:—

"As this is not the first occasion on which a 'degree' of 'Barrett College' has been obtruded on the notice of the readers of the *Express* it seems fitting to give publicity to the appended deliverance on the subject by the Commissioner of Education of the United States: 'The name of Barrett College in North Carolina does not appear on any of the lists of educational institutions published by this office and I have no information concerning it. The Barrett College and Industrial Institute at Pee Dee, North Carolina, is an institution for the education of coloured persons. All of its teachers are of the coloured race and it does not have any students in college classes. ..... The institution is classed as a secondary school.'"

GARBAGE FOR THE CONSUMPTION OF CHILDREN.

Salvatore Alloca, described as an ice-cream manufacturer, was ordered recently at Deptford police-court to pay fines amounting to £3, with 4s. costs, for storing "ice-cream" on premises which were in a dirty and insanitary state and for causing "ice-cream" to be manufactured in a room used as a living room. The evidence showed that in the room where the concoction was manufactured meals were eaten and as many as six men at a time smoked their pipes. The evidence of the medical officer of health dealt with the place of storage where he had seen cans of milk standing. It consisted of a small shed opening on to a yard with broken pavement and with water standing in the crevices. It was shown, also, that the defendant had previously been convicted of a similar offence. Prepared under the best conditions conceivable the "ice-cream" sold to children in halfpenny worths from barrows in the street can scarcely be anything but an unwholesome mess and it would be a benefit rather than a loss to the community if its sale were forbidden altogether or subjected to such continual restrictions of inspection and analysis as to render a profitable trade in it impossible. Wise parents reading the reports of such cases as that referred to will forbid their children to buy "half-penny licks" and will refuse to provide them with money to purchase such indulgences.

A MISLEADING DESCRIPTION.

To the Editors of THE LANCET.

SIRS,—A firm of surgical instrument makers, Messrs. Hockin, Wilson, and Co., of 13 to 16, New Inn Yard, Tottenham-court-road, London, W., has been advertising and sending round a pamphlet advertising an all-metal hypodermic syringe of five minims capacity. A hypodermic syringe of that capacity would be a desirable instrument, the capacity being the usual recognised dose. I obtained one and a fortnight afterwards had occasion to use it when I found to my surprise that the syringe, which is not graduated, contained not five minims as stated, but ten minims or more. The result was an almost fatal effect to the patient. After testing the capacity of the syringe I at once wrote to Messrs. Hockin, Wilson, and Co., and their reply was that the error was made in printing their circular and that they much regretted it. Upon receiving their letter I suggested that they should let the press know to whom they had supplied the syringes and their reply was that they could not send another circular round. As this might have a serious result, in the interest of the medical profession and of the public, I feel bound to write this letter to you and the other medical papers to call attention to it.

I am, Sirs, yours faithfully,
ARTHUR JOSEPH O'LEARY,
Honorary Anæsthetist, Liverpool Royal Infirmary.

Liverpool, July 22nd, 1905.

FASHIONABLE INTELLIGENCE:

To the Editors of THE LANCET.

SIRS,—The following notice appears in the *Daily Telegraph* of to-day.

"Dr. John H. Clarke, of 8, Bolton-street, Piccadilly, will leave London on Saturday next, August 5th, for Walcot, Norwich. He will be absent until August 30th."

I cannot think that the movements of Dr. Clarke or of any other practitioner should be publicly notified as above.

I am, Sirs, yours faithfully,
INNOCENCE.

August 1st, 1905.

*** Such a notice is much to be deprecated.—ED. L.

MEDICAL WITNESSES AT CORONERS' INQUESTS.

To the Editors of THE LANCET.

SIRS,—Are honorary medical officers to a hospital entitled to a fee for giving evidence before coroners in cases where the death takes place in the hospital, or does the Act only apply to paid medical officers?

Thanking you in advance,
I am, Sirs, yours faithfully,
S. J.

July 29th, 1905.

*** The section of the Coroners Act dealing with the question our correspondent asks is Section 22. After mentioning the fees payable in the case of giving evidence at an inquest without making a post-mortem examination and for giving evidence as well as having made a post-mortem examination, the section goes on to state: "Where an inquest is held on the body of a person who has died in a county or other lunatic asylum, or in a public hospital, infirmary, or other medical institution, or in a building or place belonging thereto, or used for the reception of the patients thereof, whether the same be supported by endowments or by voluntary subscriptions, the medical officer, whose duty it may have been to attend the deceased person as a medical officer of such institution as aforesaid, shall not be entitled to such fee or remuneration."—ED. L.

BOVININE AS A DRESSING.

To the Editors of THE LANCET.

SIRS,—A gentleman who was under my care recently had suffered from very extensive necrosis of the right tibia. This when I saw him was completely healed, a deep furrow extending practically the whole length of the bone being present, the bottom of which was covered by thin shiny skin. The interest of the case lies in the point that, according to his statement, and I have no reason to doubt him, this healing process was brought about by means of bovinine, an extract of beef, with which it had been freely dressed. He told me that this preparation is extensively used in the United States (where he had been staying) as a dressing for callous cavities such as his, indolent ulcerating surfaces, &c. Whilst under my observation his scar broke down at its lower part, but was induced rapidly to heal by the above means. One feels tempted to inquire whether the meat extract acts as a phagocytic nutrient or merely as a stimulant to granulation formation; at any rate, it seems worthy of trial in suitable cases. I pen this note with some diffidence, for though new to me the subject-matter may be well known to others.

I am, Sirs, yours faithfully,
C. FRANCIS STEELE, M.B. Lond.

Matlock.

J. V.—Our correspondent, though not medical, takes such an intelligent interest in the problem that we advise her to send a subscription to the Cancer Research Fund, Laboratory of the Conjoint Board, Thames Embankment, W.C., and ascertain what has been done by that fund.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 3rd, 1905.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
July 28	29·98	N.E.	0·04	101	74	58	60	64	Fine
„ 29	29·95	S.	...	126	76	62	62	66	Cloudy
„ 30	29·92	W.	...	130	76	60	60	62	Cloudy
„ 31	30·00	W.	...	129	72	57	57	64	Cloudy
Aug. 1	29·92	S.W.	...	122	73	57	55	62	Overcast
„ 2	29·91	W.	...	125	75	54	55	62	Fine
„ 3	29·57	S.W.	0·10	63	61	59	59	61	Raining

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (7th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.).

TUESDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (1.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (9th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M., National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (8.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

THURSDAY (10th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.).

FRIDAY (11th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.).

SATURDAY (12th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THURSDAY (10th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith road, W.).—4 P.M. Mr. Armour: Surgical Cases.

FRIDAY (11th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Baldwin: Treatment of Injuries of Tendons, Muscles, and Nerves.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1905, which was completed with the issue of June 24th, and the Title-page to the Volume, were given in THE LANCET of July 1st.

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VOLUMES for the first half of the year 1905 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

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During the week marked copies of the following newspapers have been received:—*Exeter Flying Post, British Food Journal, British Australasian, Birmingham Post, Halifax Guardian, Whitehaven News, Dewsbury District News, Morning Post, Western Times (Exeter), Manchester Courier, Dublin Independent, Cardiff News, Daily News, Times, Truro Gazette, Durham Chronicle, St. Austell Star, Bangor Observer, Morning Leader, Dublin Express, Bolton Chronicle, Middlesbrough Gazette, Leeds and Yorkshire Post, Manchester Evening News, Limerick Chronicle, Yorkshire Herald, Crusader, Notts Guardian, Darlington Star, Leicester Mercury, Norwich Eastern Daily Press, &c.*

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